

FIG. 1-1

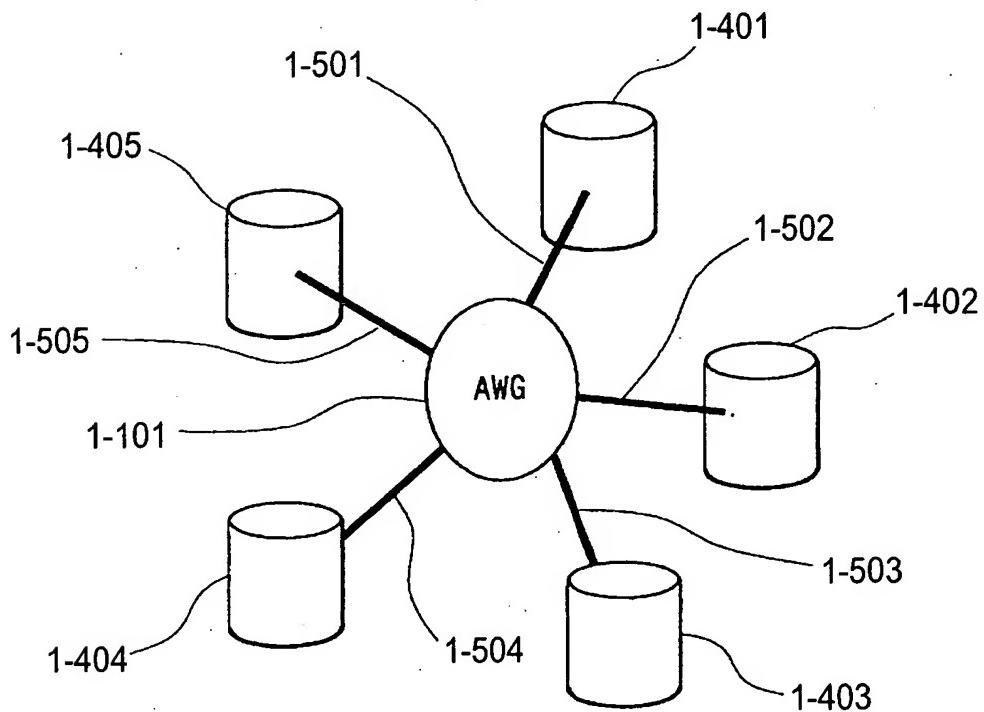


FIG. 1-2

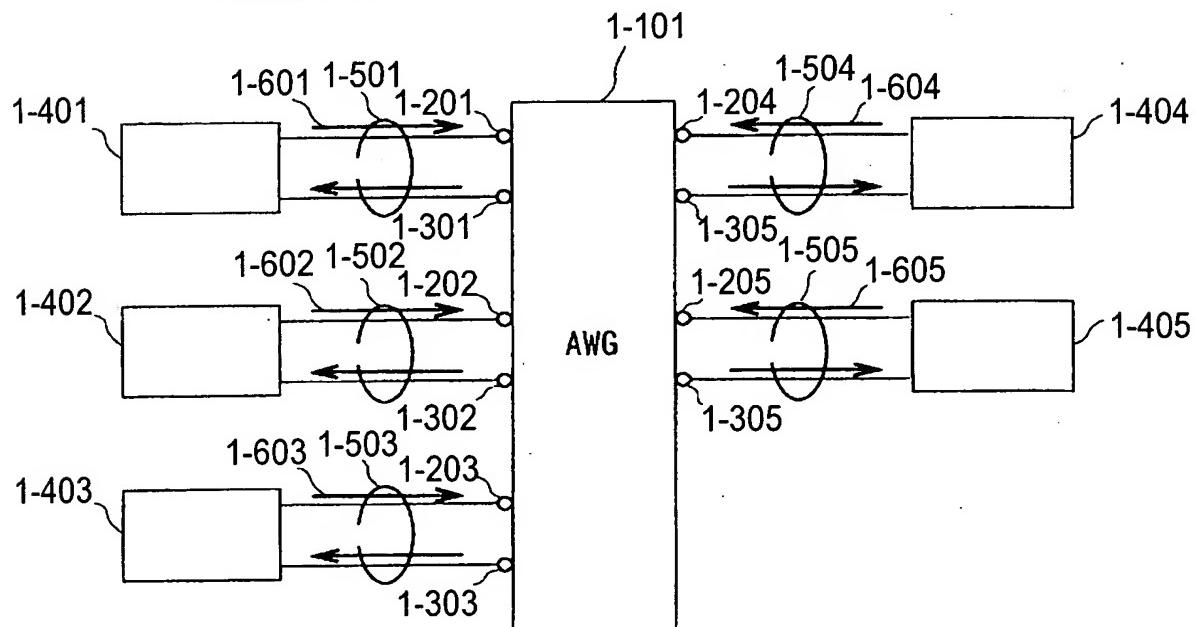


FIG. 1-3

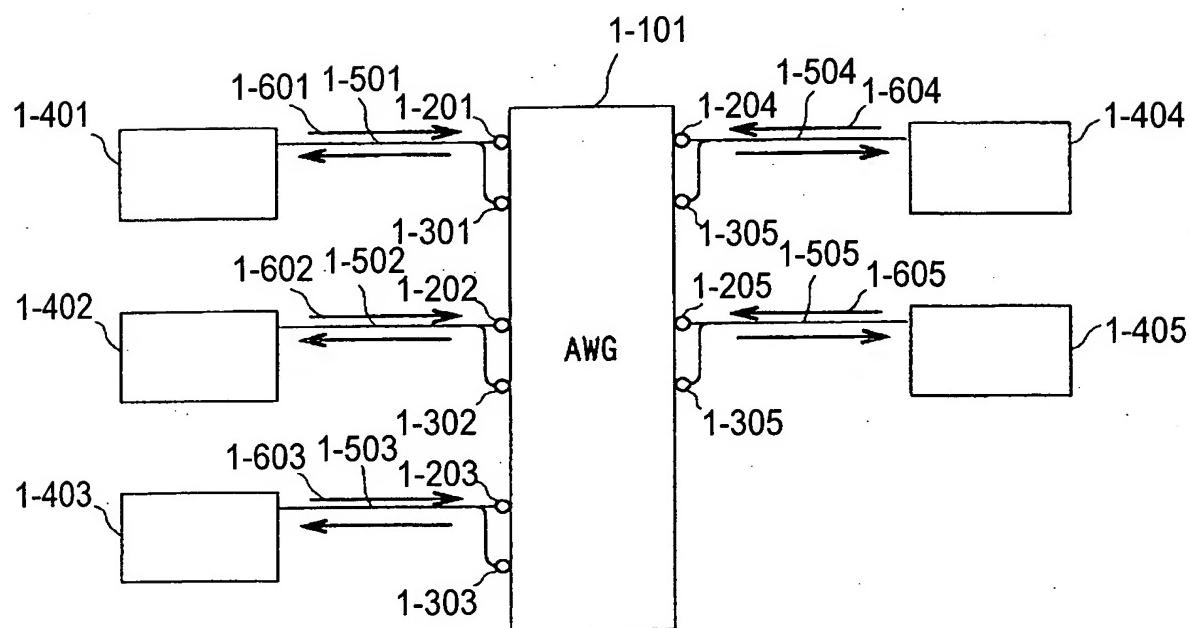


FIG. 1-4

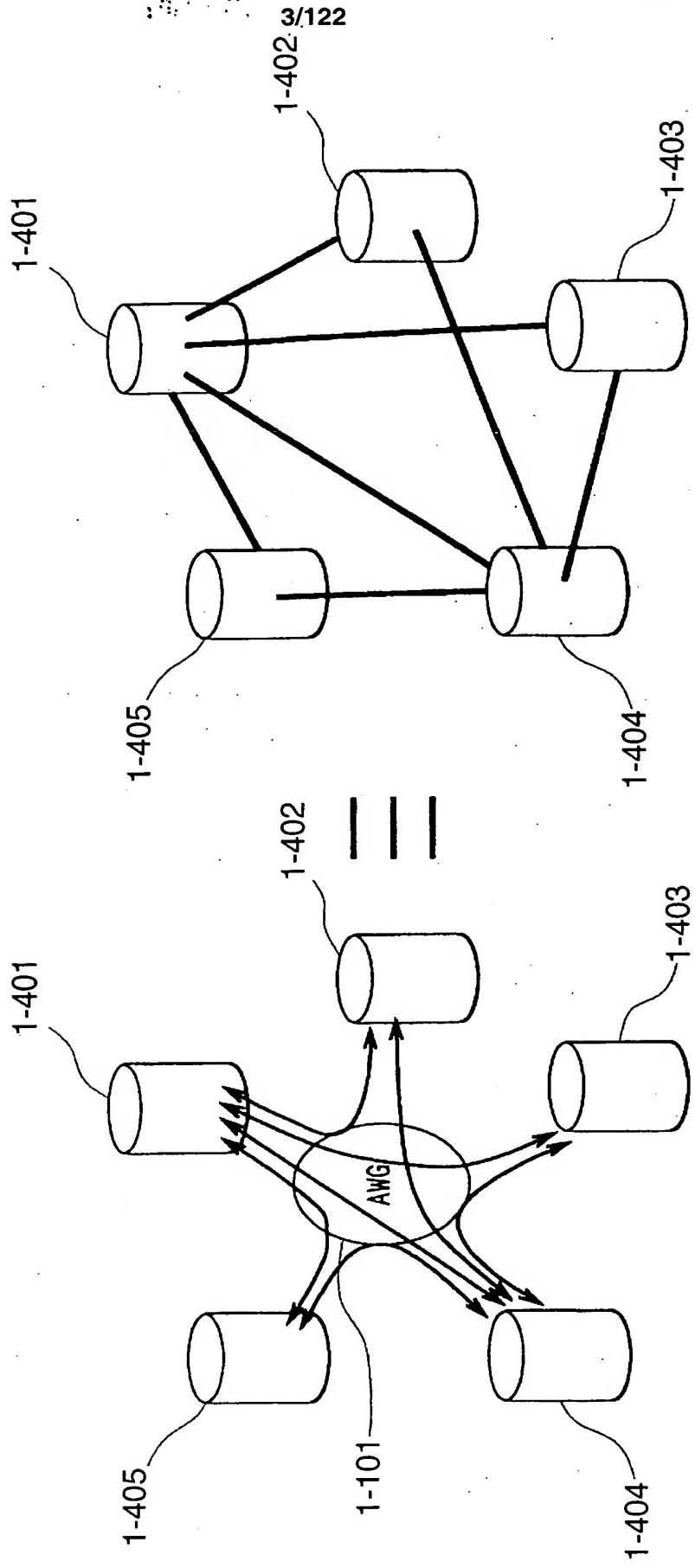


IMAGE OF OPTICAL SIGNAL ROUTE (WAVELENGTH PATH)

LOGICAL NETWORK TOPOLOGY STRUCTURE OF OPTICAL SIGNAL ROUTE

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FIG. 1-5

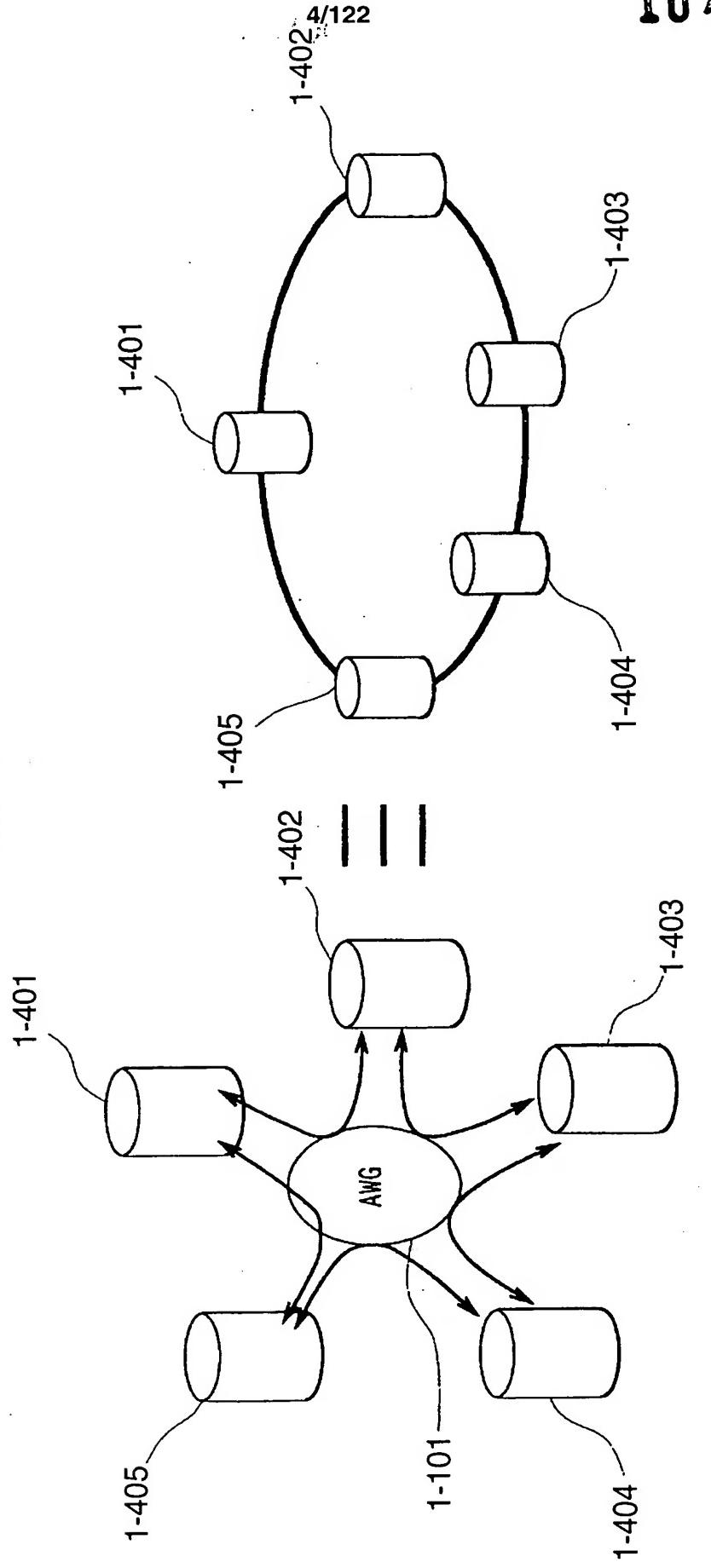


IMAGE OF OPTICAL SIGNAL ROUTE (WAVELENGTH PATH)

LOGICAL NETWORK TOPOLOGY STRUCTURE OF OPTICAL SIGNAL ROUTE

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FIG. 1-6

		OPTICAL OUTPUT PORT				
		1-301	1-302	1-303	1-304	1-305
OPTICAL INPUT PORT	1-201	λ_1	λ_2	λ_3	λ_4	λ_5
	1-202	λ_5	λ_1	λ_2	λ_3	λ_4
	1-203	λ_4	λ_5	λ_1	λ_2	λ_3
	1-204	λ_3	λ_4	λ_5	λ_1	λ_2
	1-205	λ_2	λ_3	λ_4	λ_5	λ_1

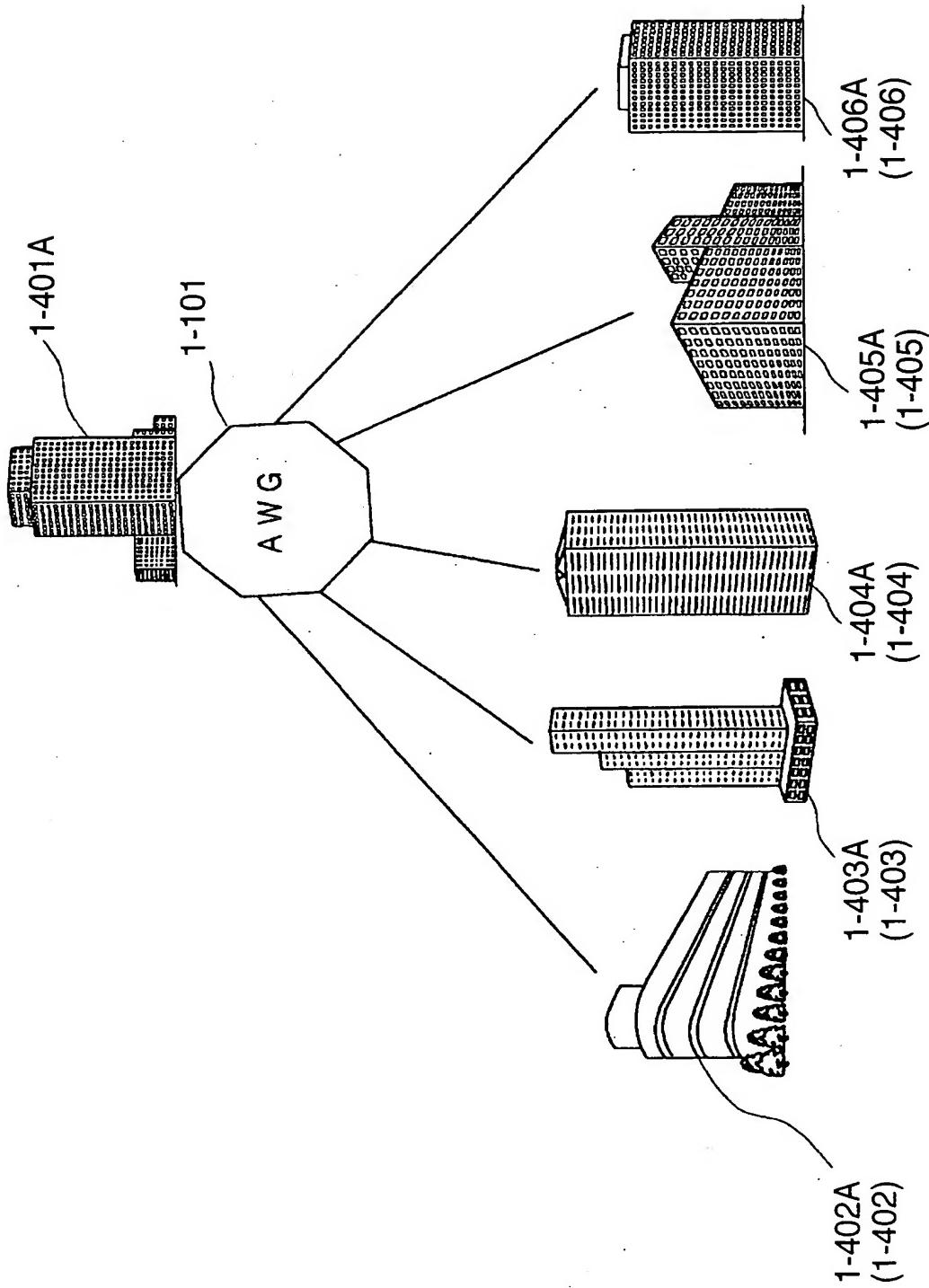
STAR(MESH)-SHAPED LOGICAL NETWORK TOPOLOGY

FIG. 1-7

		OPTICAL OUTPUT PORT				
		1-301	1-302	1-303	1-304	1-305
OPTICAL INPUT PORT	1-201	λ_1	λ_2	λ_3	λ_4	λ_5
	1-202	λ_5	λ_1	λ_2	λ_3	λ_4
	1-203	λ_4	λ_5	λ_1	λ_2	λ_3
	1-204	λ_3	λ_4	λ_5	λ_1	λ_2
	1-205	λ_2	λ_3	λ_4	λ_5	λ_1

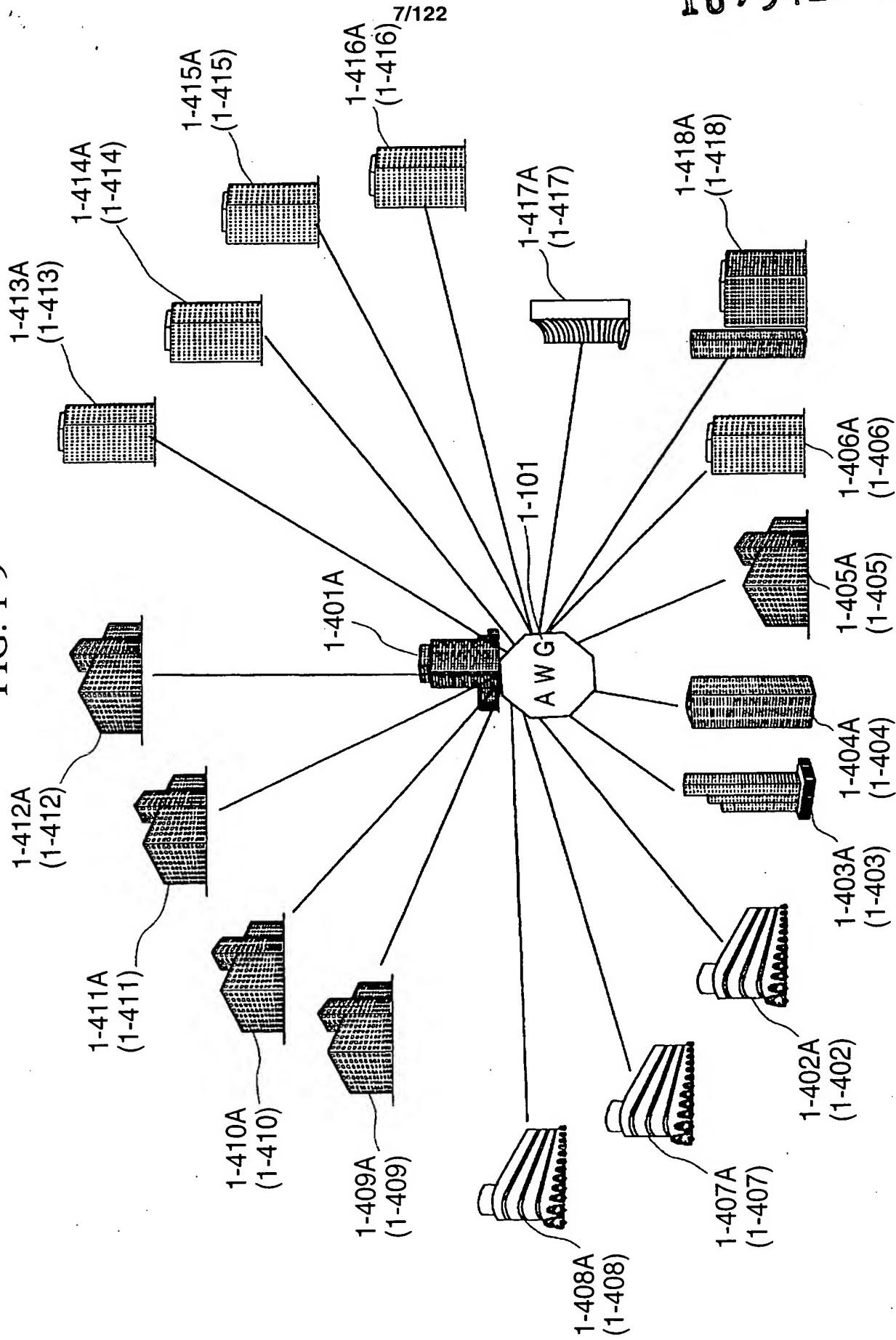
RING-SHAPED LOGICAL NETWORK TOPOLOGY

FIG. 1-8



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FIG. 1-9



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FIG. 1-10

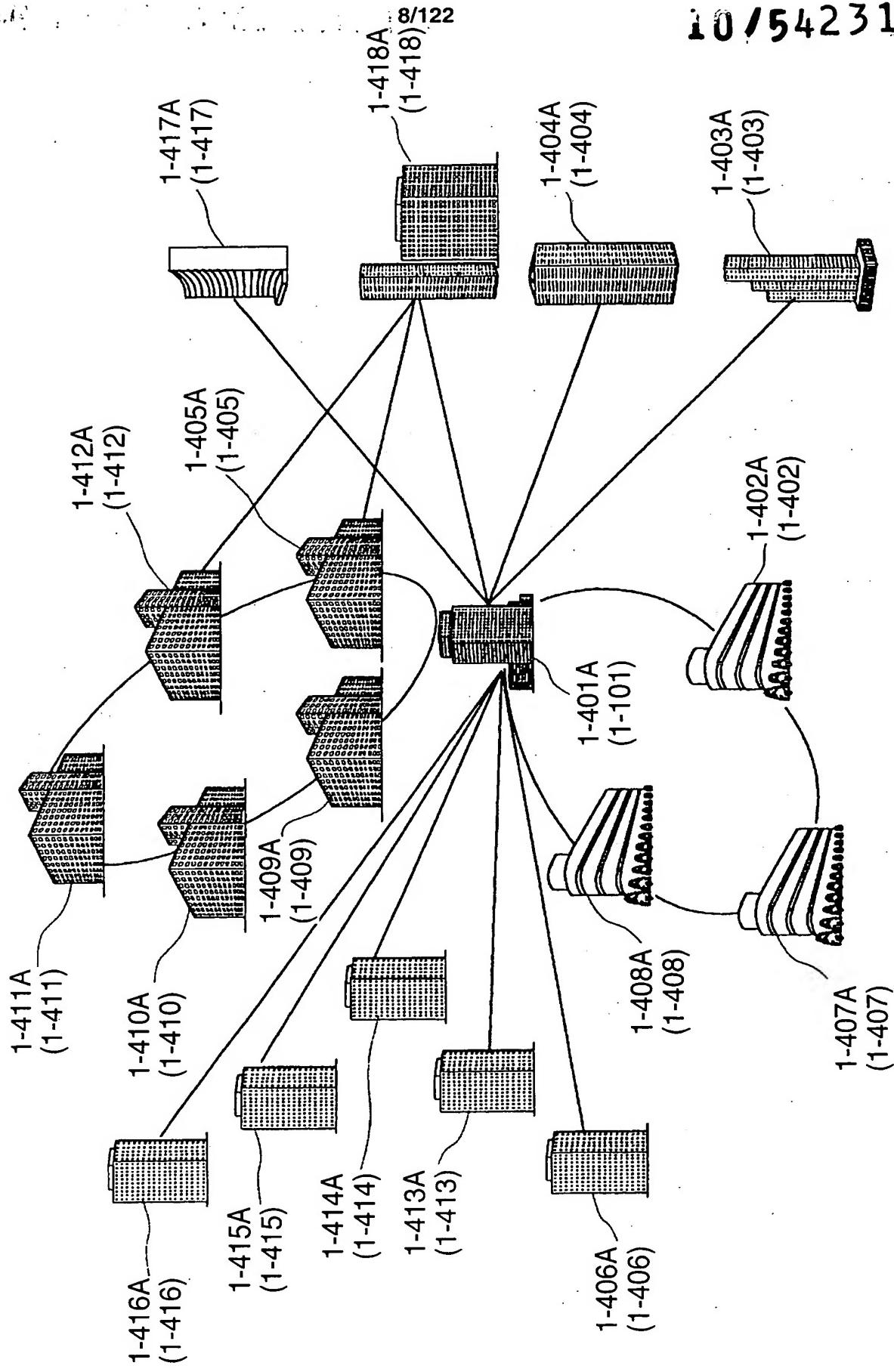


FIG. 1-11

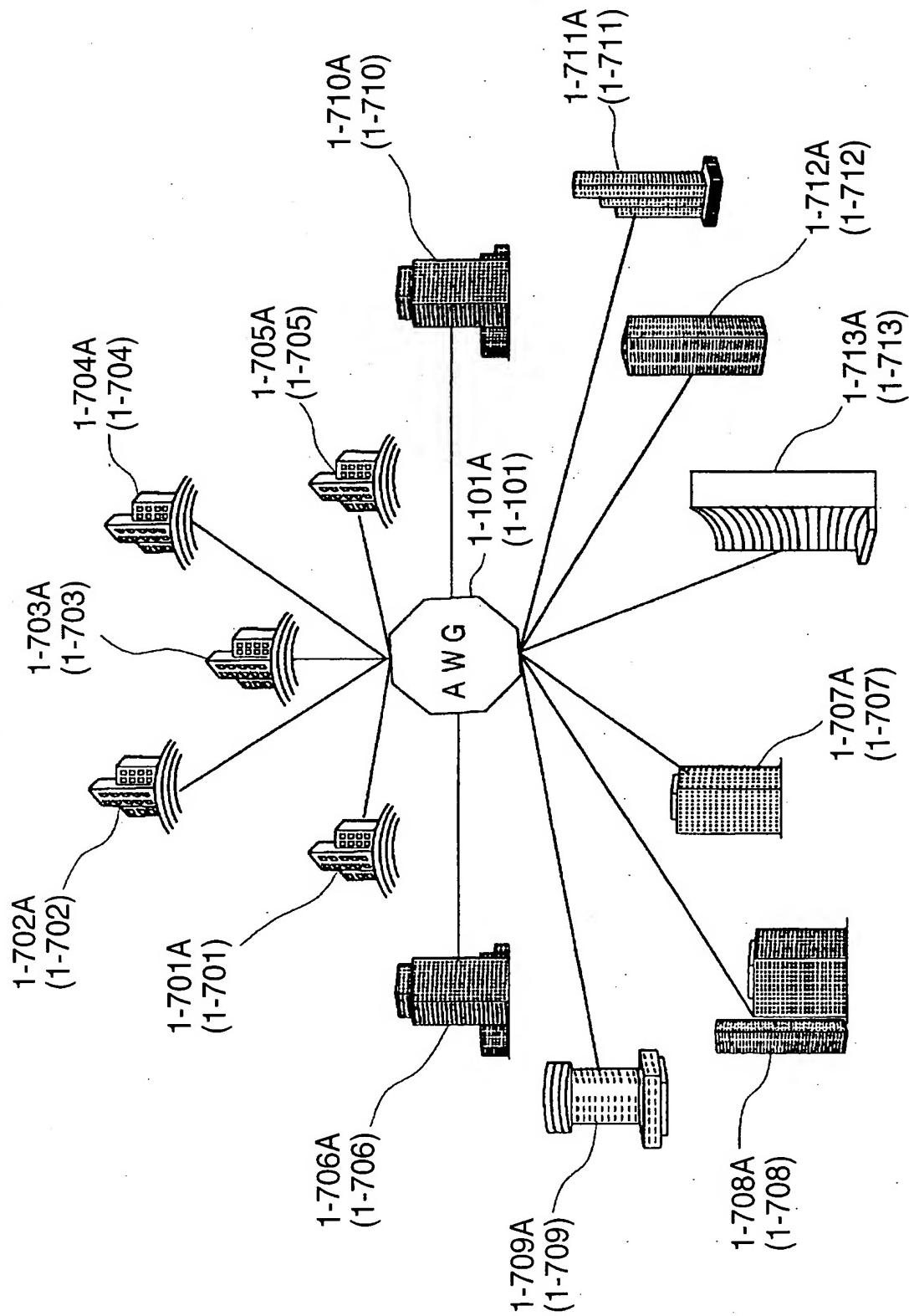
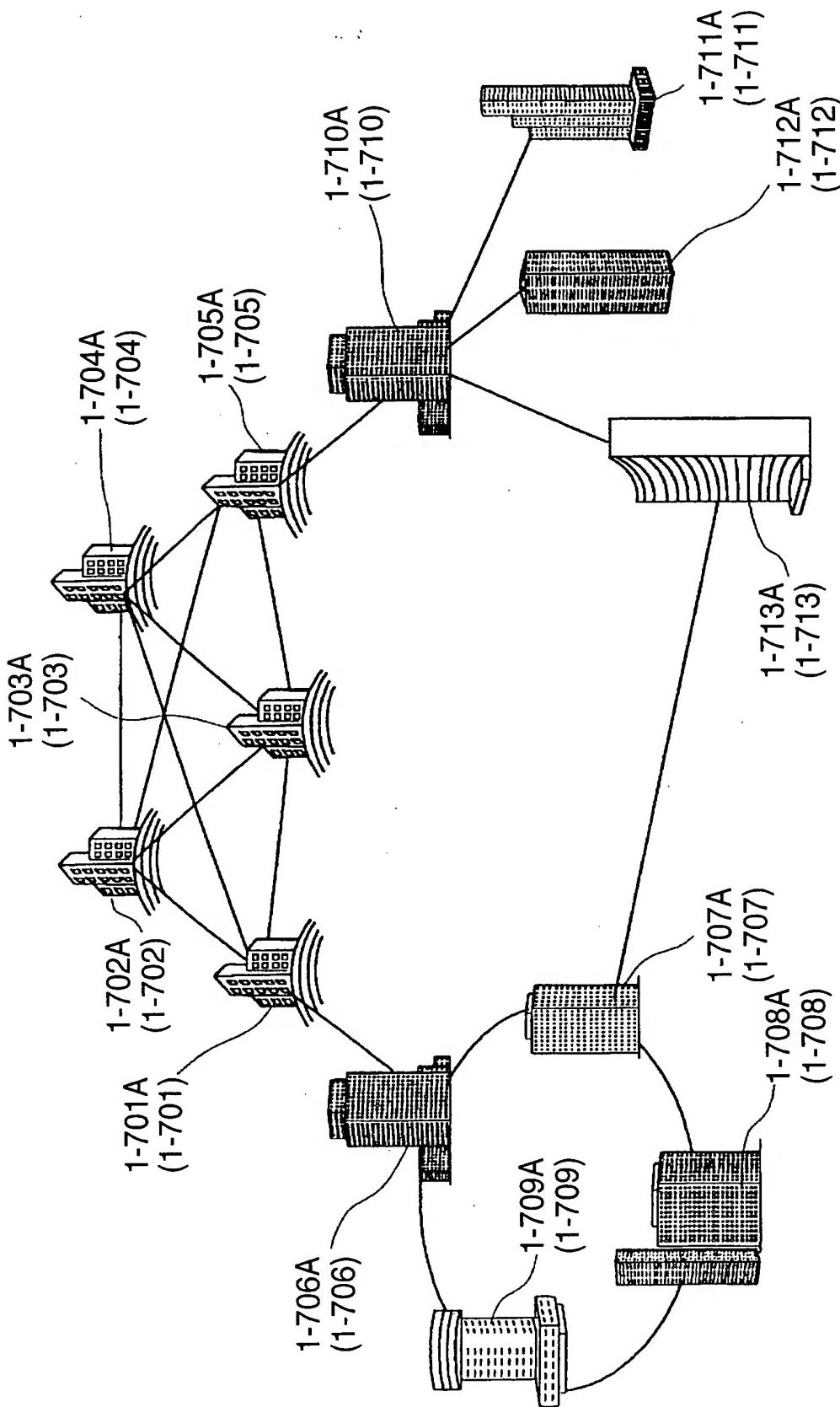
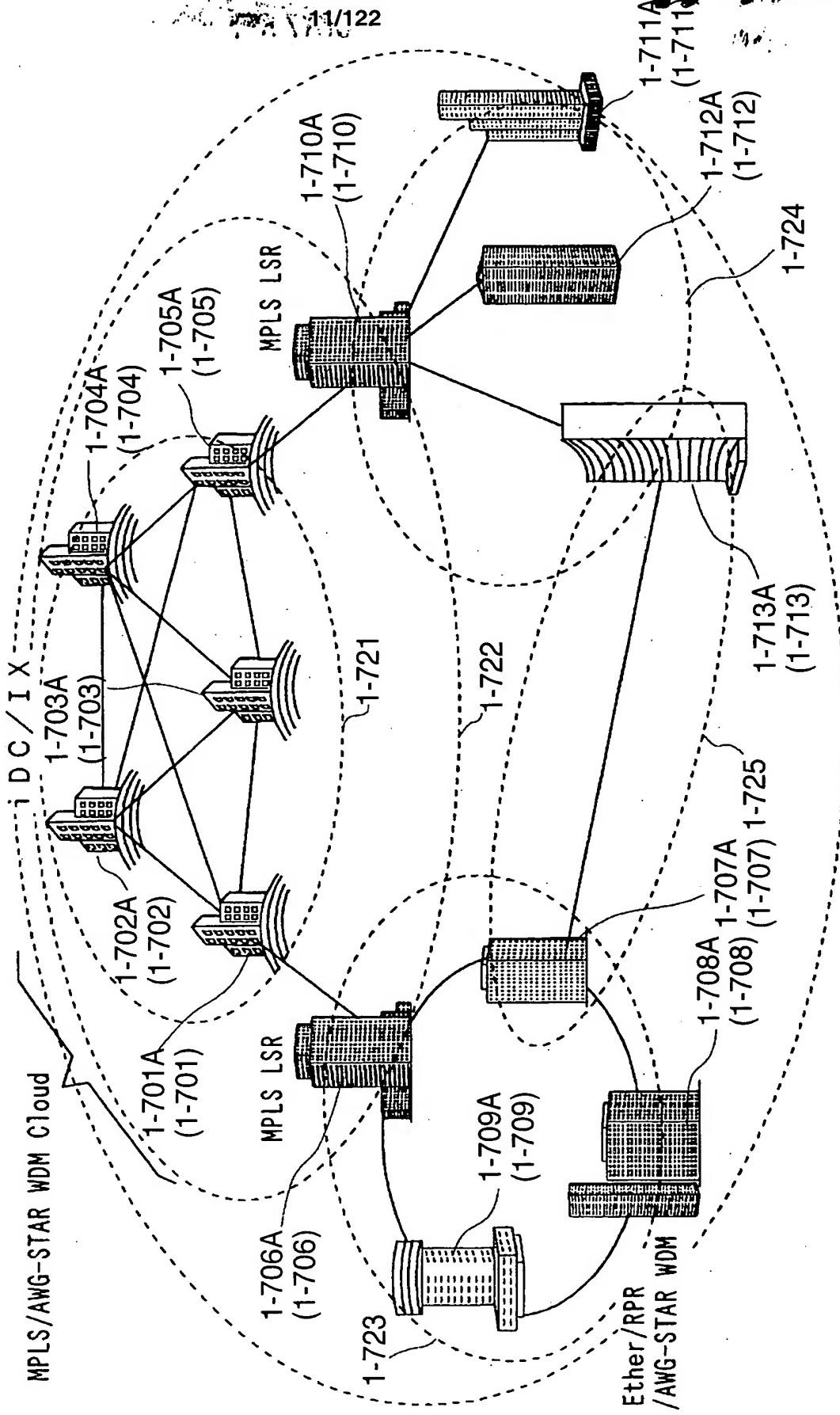


FIG. 1-12



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FIG. 1-13



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FIG. 1-14

SPECIFIC NUMBER OF NETWORK-NODE EQUIPMENT	OPTICAL OUTPUT PORT															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}
2	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1
3	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2
4	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3
5	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4
6	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5
7	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6
8	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7
9	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8
10	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9
11	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}
12	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}
13	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}
14	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}
15	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}
16	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}

OPTICAL INPUT PORT

1-722

1-725

OPTICAL OUTPUT PORT

1-725

1-725

1-724

FIG. 1-15

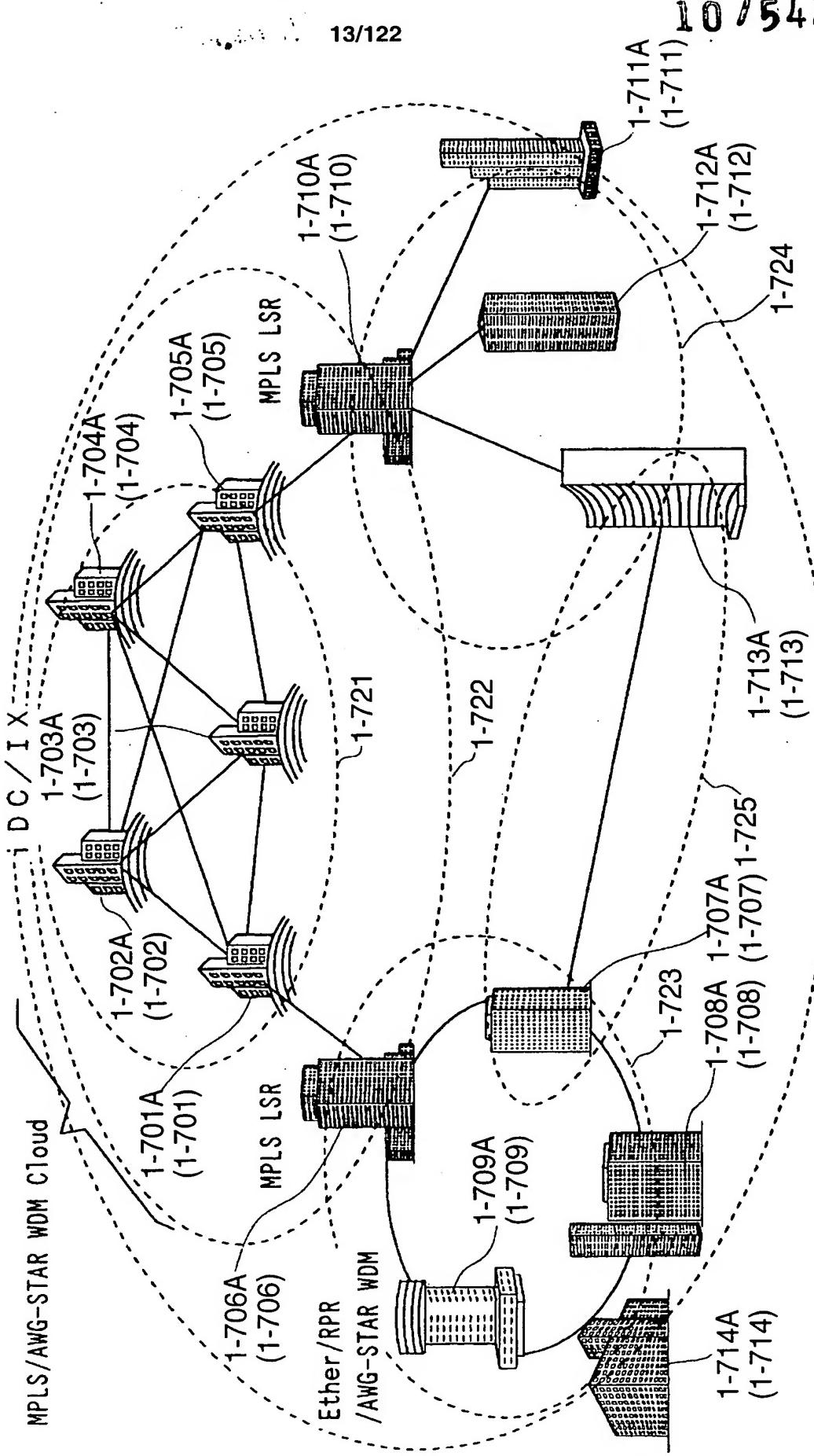


FIG. 1-16

SPECIFIC NUMBER OF NETWORK-NODE EQUIPMENT	OPTICAL OUTPUT PORT															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}
2	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1
3	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2
4	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3
5	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4
6	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5
7	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6
8	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7
9	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8
10	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9
11	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}
12	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}
13	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}
14	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}
15	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}
16	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}

OPTICAL INPUT PORT

FIG. 1-17

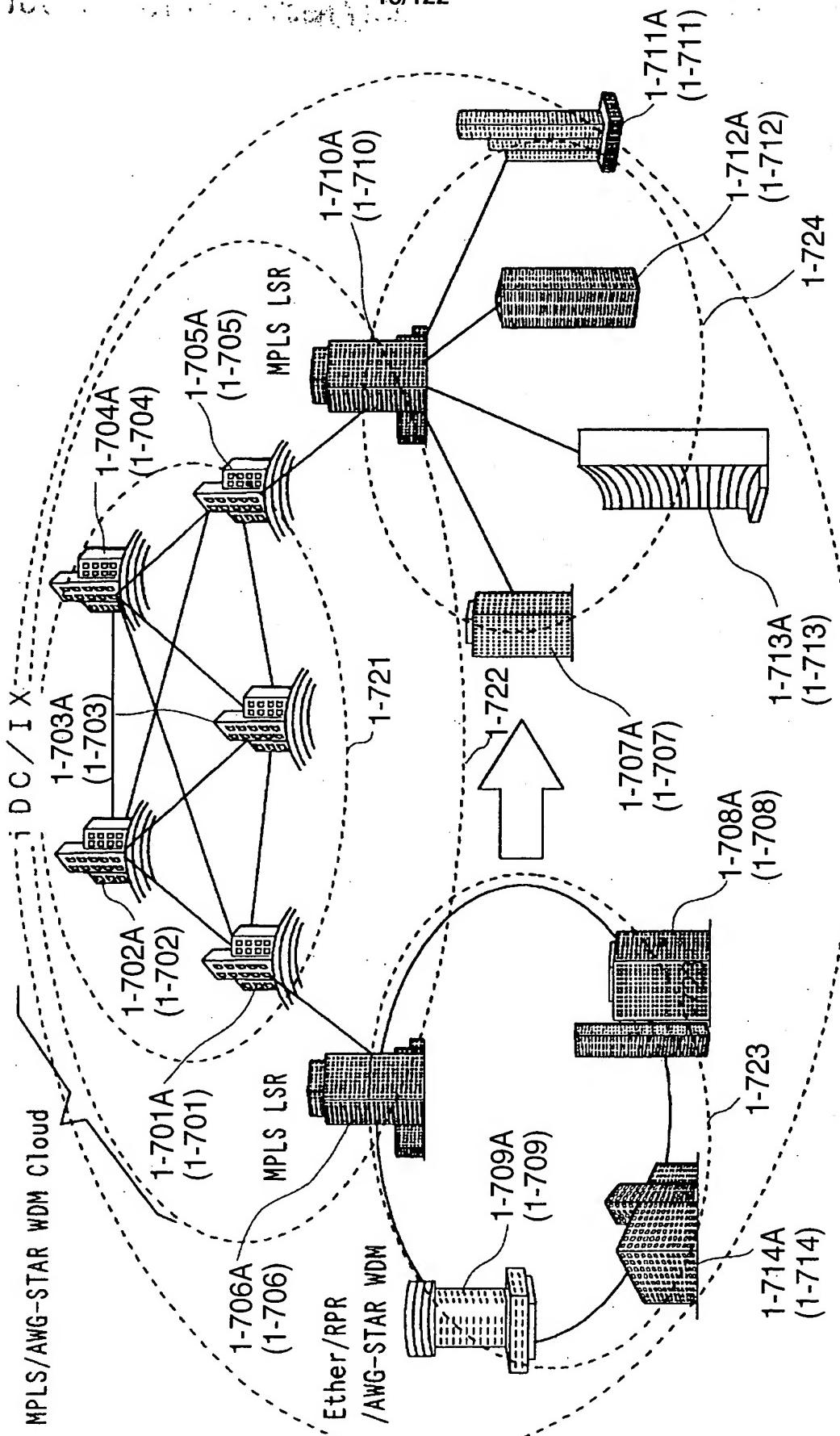


FIG. 1-18

SPECIFIC NUMBER OF NETWORK-NODE EQUIPMENT	OPTICAL OUTPUT PORT															
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}
2	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1
3	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2
4	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3
5	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4
6	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5
7	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6
8	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7
9	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8
10	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9
11	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}
12	λ_{12}	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}
13	λ_{13}	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}
14	λ_{14}	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}
15	λ_{15}	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}
16	λ_{16}	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7	λ_8	λ_9	λ_{10}	λ_{11}	λ_{12}	λ_{13}	λ_{14}	λ_{15}

OPTICAL INPUT PORT

FIG. 1-19

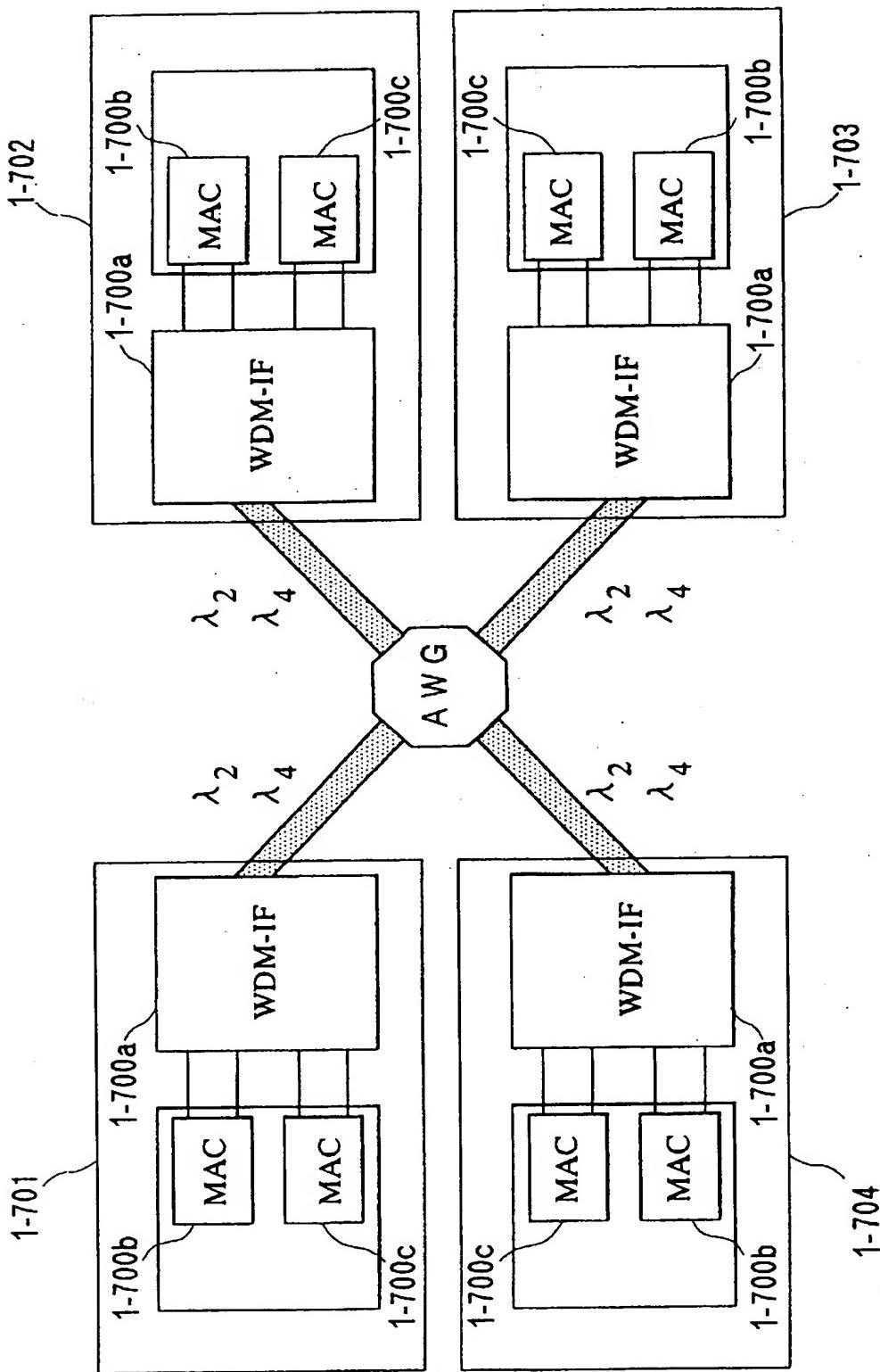
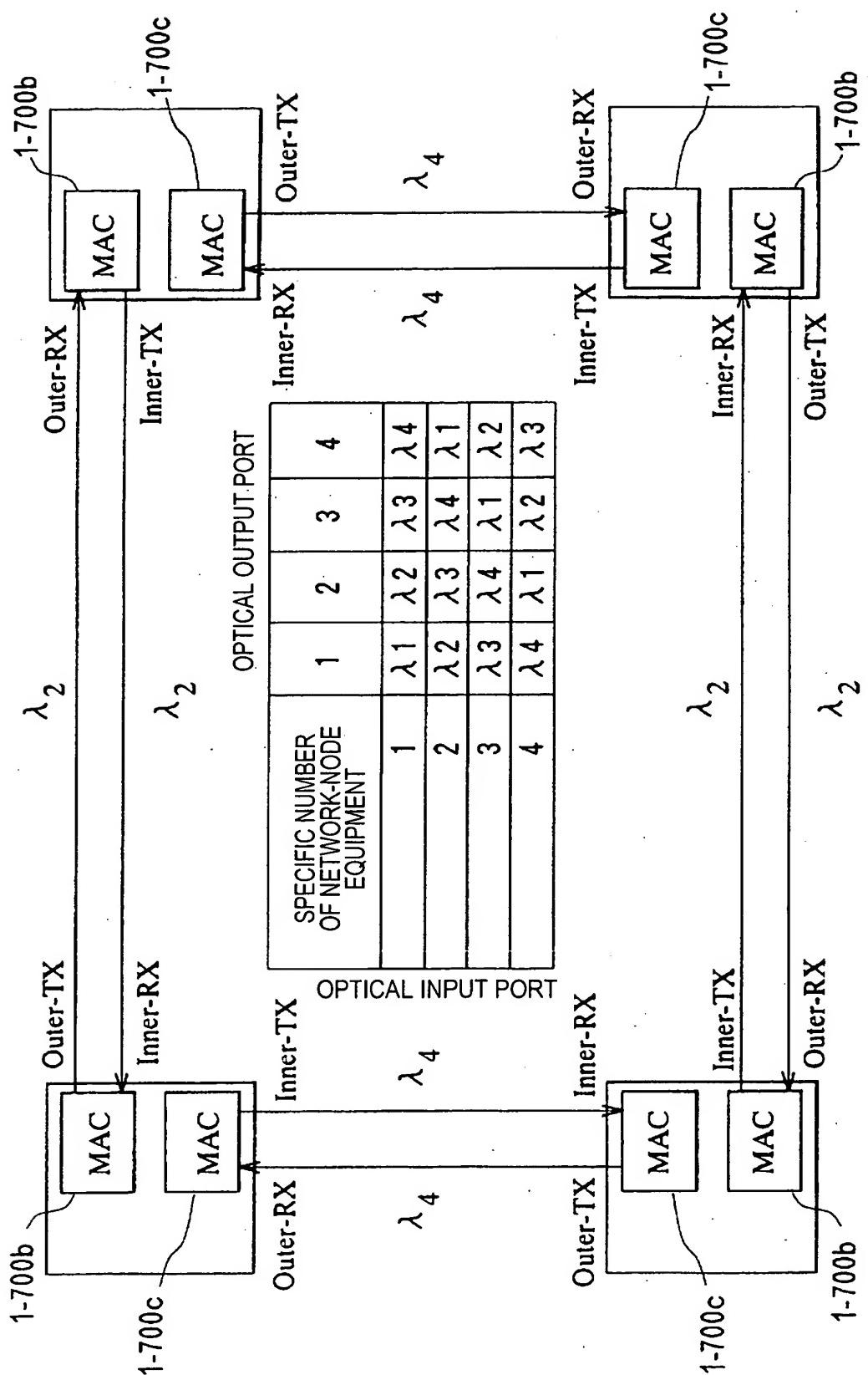


FIG. 1-20



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FIG. 1-21

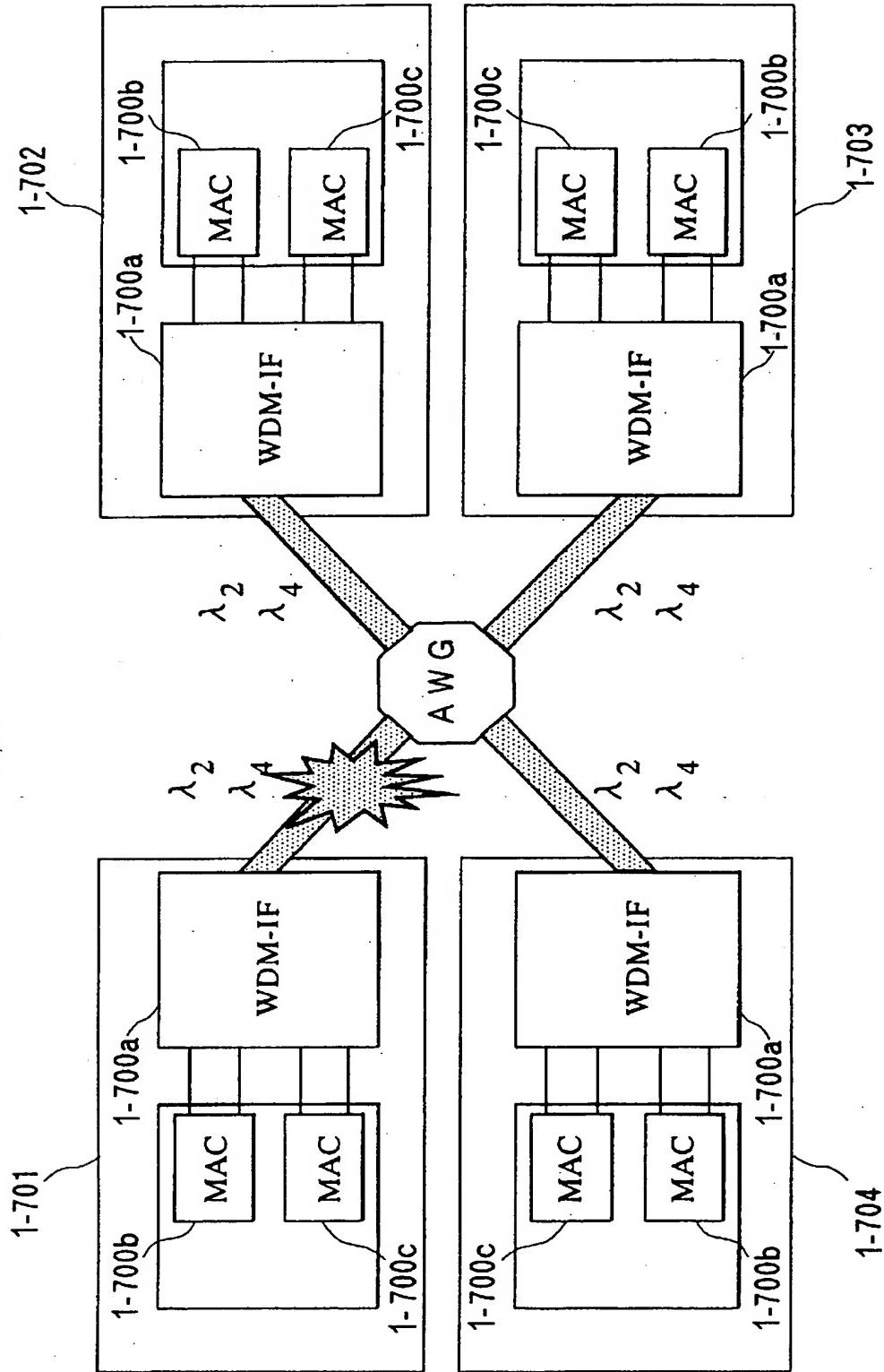


FIG. 1-22

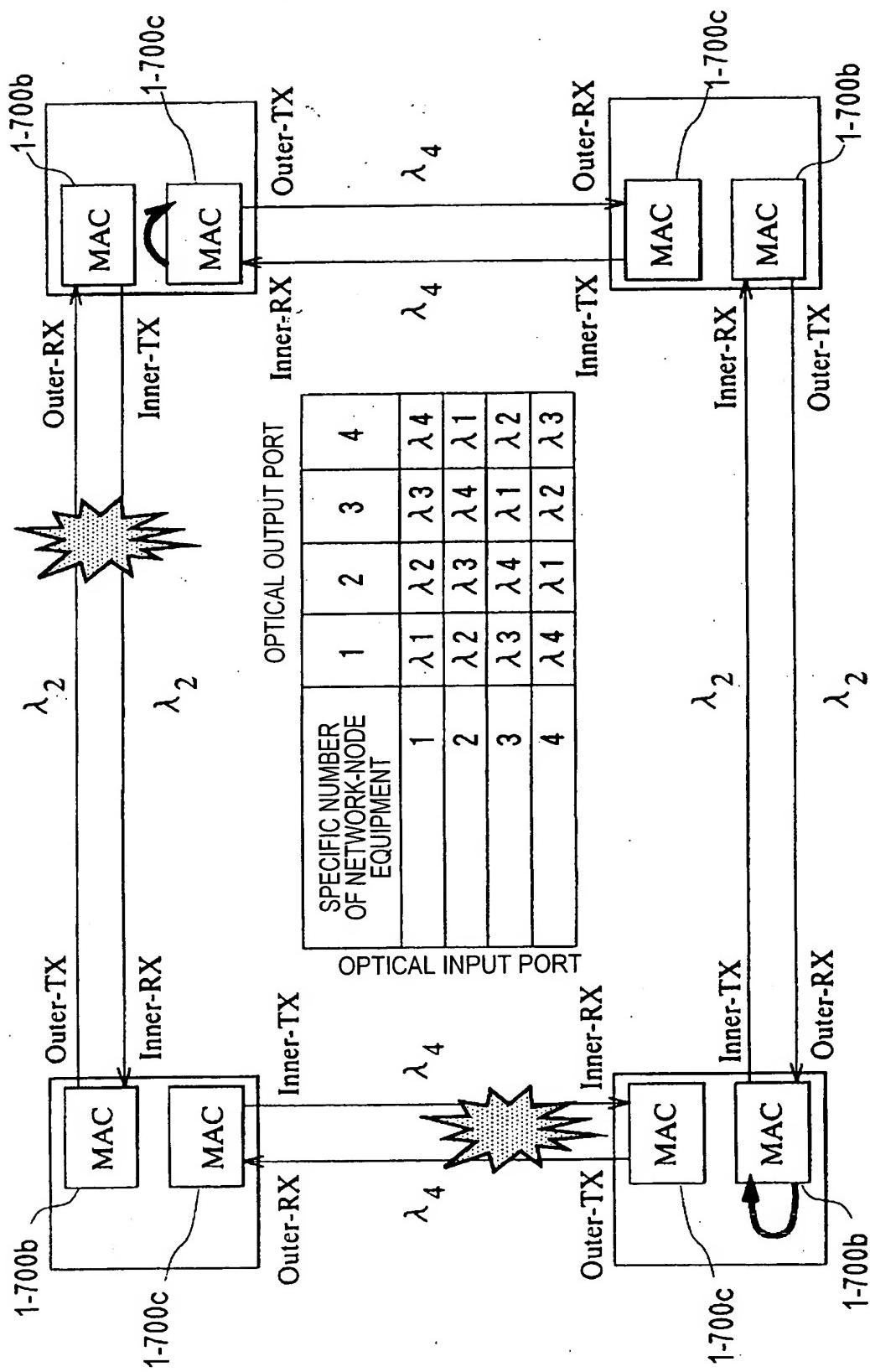
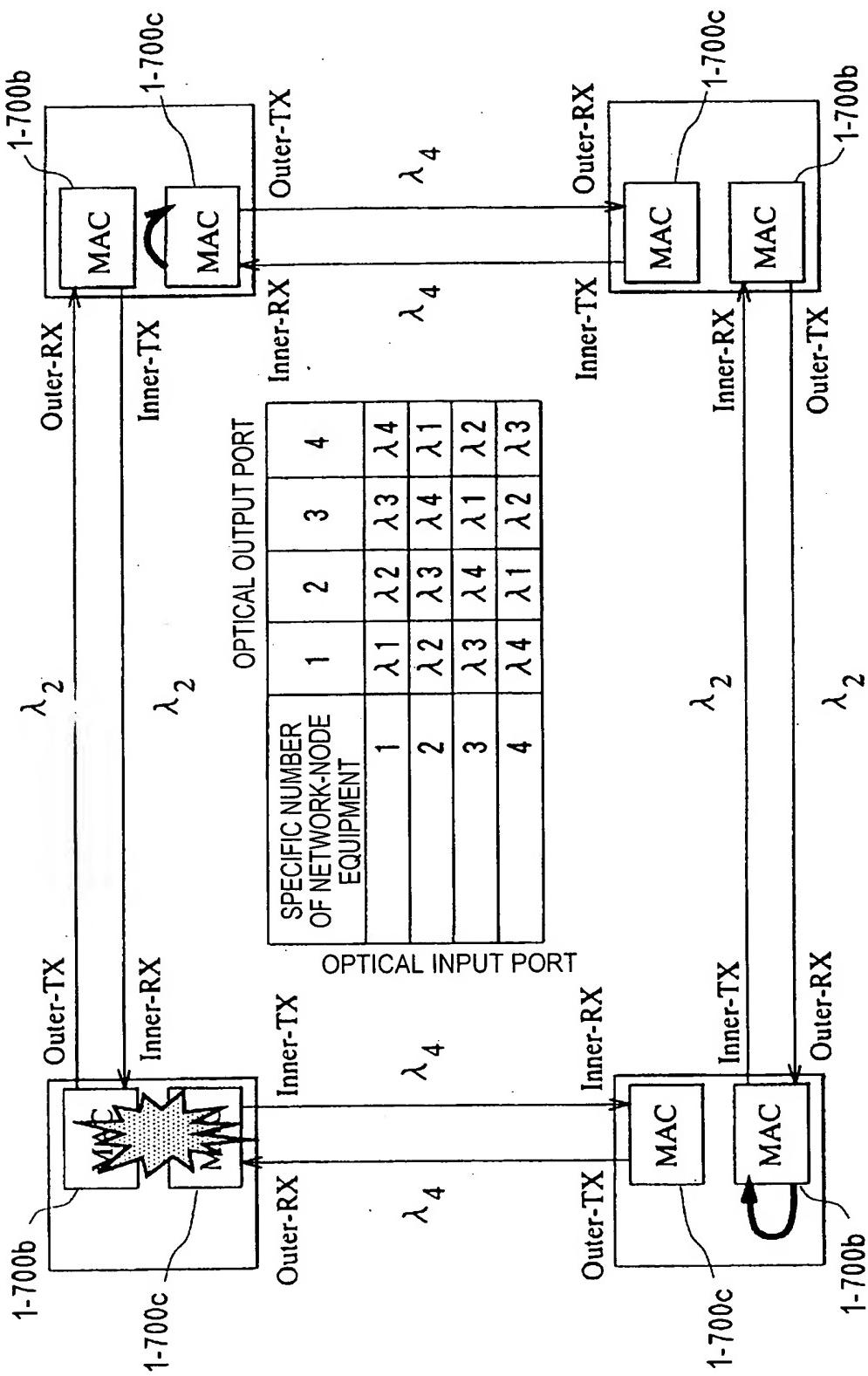


FIG. 1-23

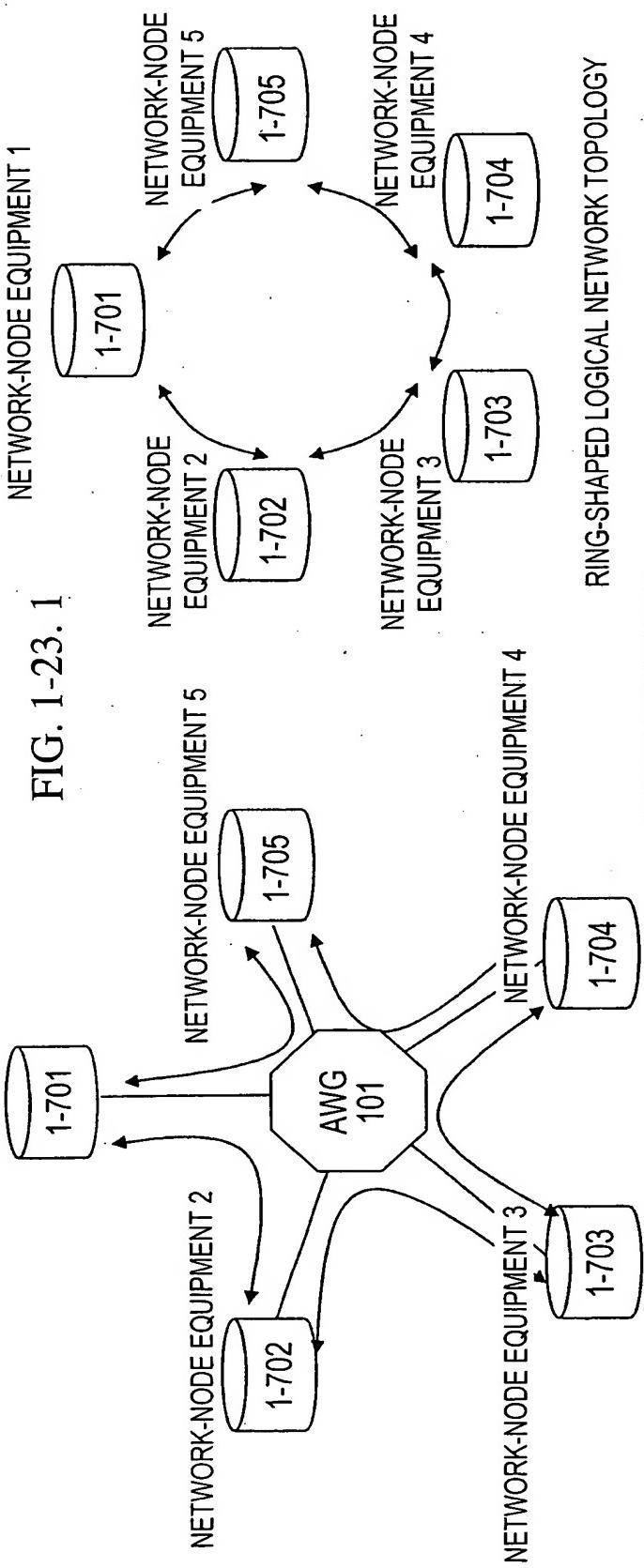


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NETWORK-NODE EQUIPMENT 1

FIG. 1-23. 1 NETWORK-NODE EQUIPMENT 1



STAR-SHAPED PHYSICAL NETWORK
 TOPOLOGY AND OPTICAL SIGNAL ROUTE

SPECIFIC NUMBER OF
 NETWORK-NODE
 EQUIPMENT

OPTICAL INPUT PORT	OPTICAL OUTPUT PORT				
	1	2	3	4	5
1	λ_1	λ_2	λ_3	λ_4	λ_5
2	λ_5	λ_1	λ_2	λ_3	λ_4
3	λ_4	λ_5	λ_1	λ_2	λ_3
4	λ_3	λ_4	λ_5	λ_1	λ_2
5	λ_2	λ_3	λ_4	λ_5	λ_1

RING-SHAPED LOGICAL NETWORK TOPOLOGY WHERE N=5

WAVELENGTH ALLOCATION TABLE

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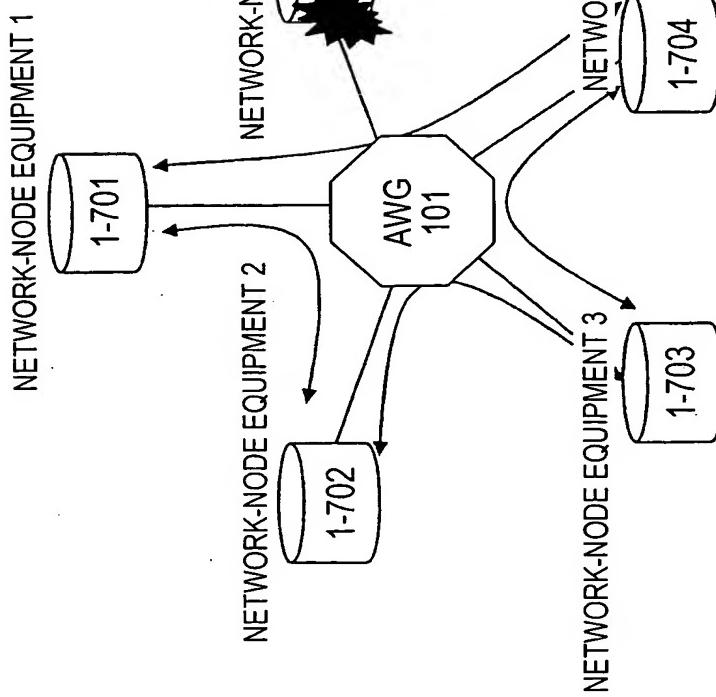
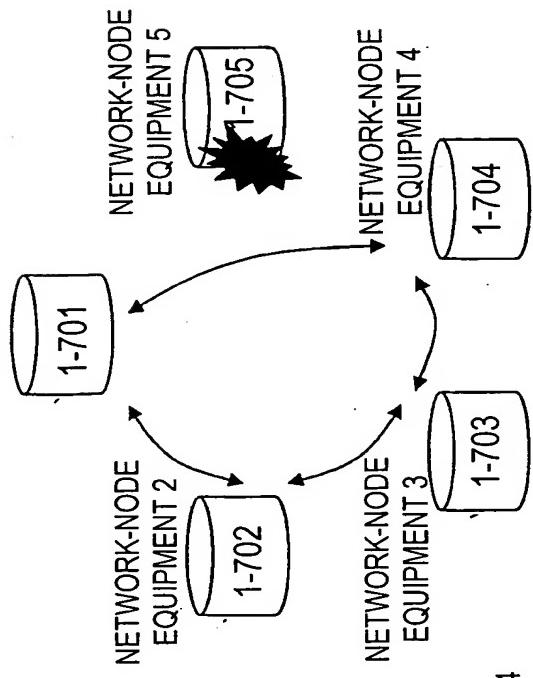


FIG. 1-23. 2 NETWORK-NODE EQUIPMENT 1



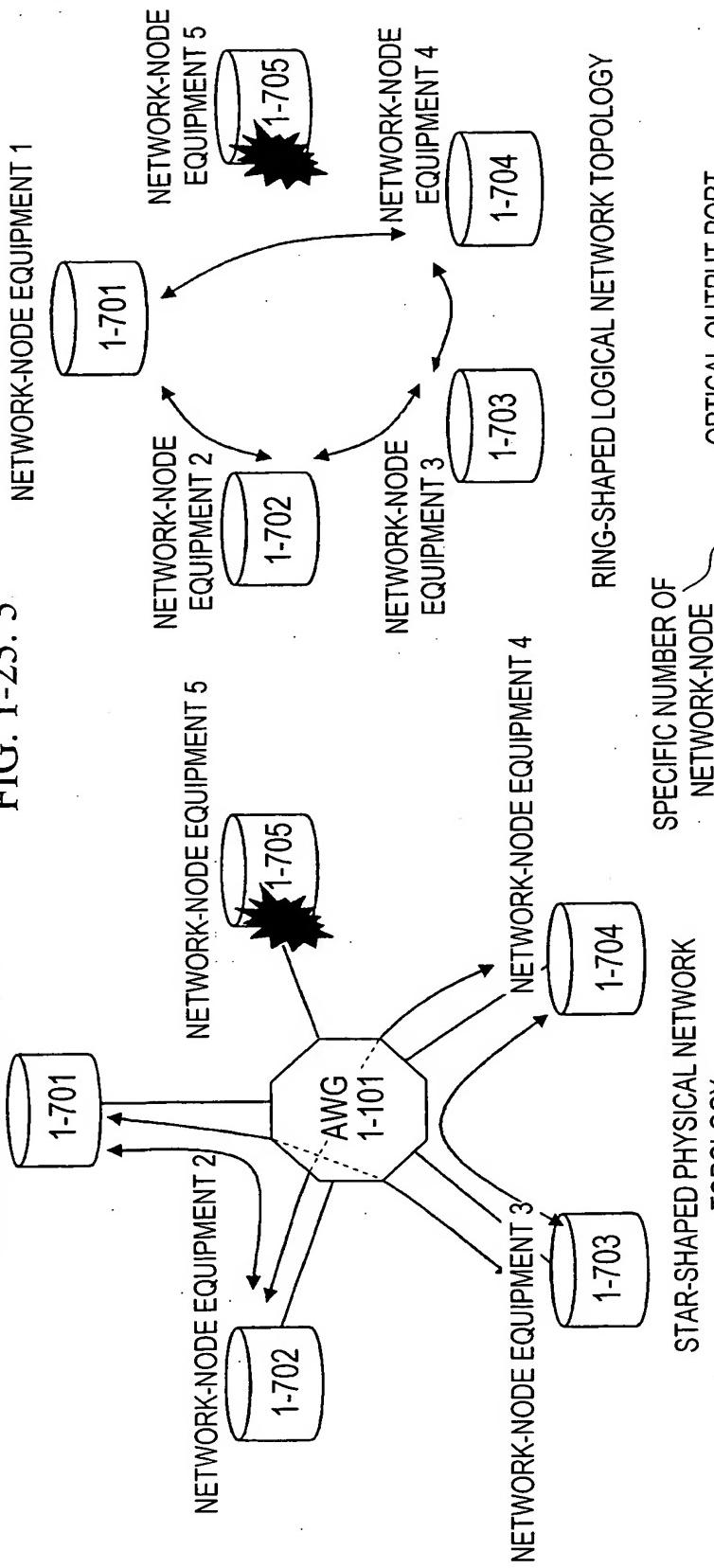
SPECIFIC NUMBER OF NETWORK-NODE EQUIPMENT	OPTICAL INPUT PORT	OPTICAL OUTPUT PORT				
		1	2	3	4	5
1	λ1	λ2	λ3	λ4	λ5	
2	λ5	λ1	λ2	λ3	λ4	
3	λ4	λ5	λ1	λ2	λ3	
4	λ3	λ4	λ5	λ1	λ2	
5	λ2	λ3	λ4	λ5	λ1	

RECONFIGURATION OF RING-SHAPED
LOGICAL NETWORK TOPOLOGY

WAVELENGTH ALLOCATION TABLE

NETWORK-NODE EQUIPMENT 1

FIG. 1-23. 3 NETWORK-NODE EQUIPMENT 1



SPECIFIC NUMBER OF
NETWORK-NODE
EQUIPMENT

RING-SHAPED LOGICAL NETWORK TOPOLOGY

OPTICAL INPUT PORT	OPTICAL OUTPUT PORT				
	1	2	3	4	5
1	λ_1	λ_2	λ_3	λ_4	λ_5
2	λ_5	λ_1	λ_2	λ_3	λ_4
3	λ_4	λ_5	λ_1	λ_2	λ_3
4	λ_3	λ_4	λ_5	λ_1	λ_2
5	λ_2	λ_3	λ_4	λ_5	λ_1

RECONFIGURATION OF RING-SHAPED
LOGICAL NETWORK TOPOLOGY

WAVELENGTH ALLOCATION TABLE

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FIG. 1-24

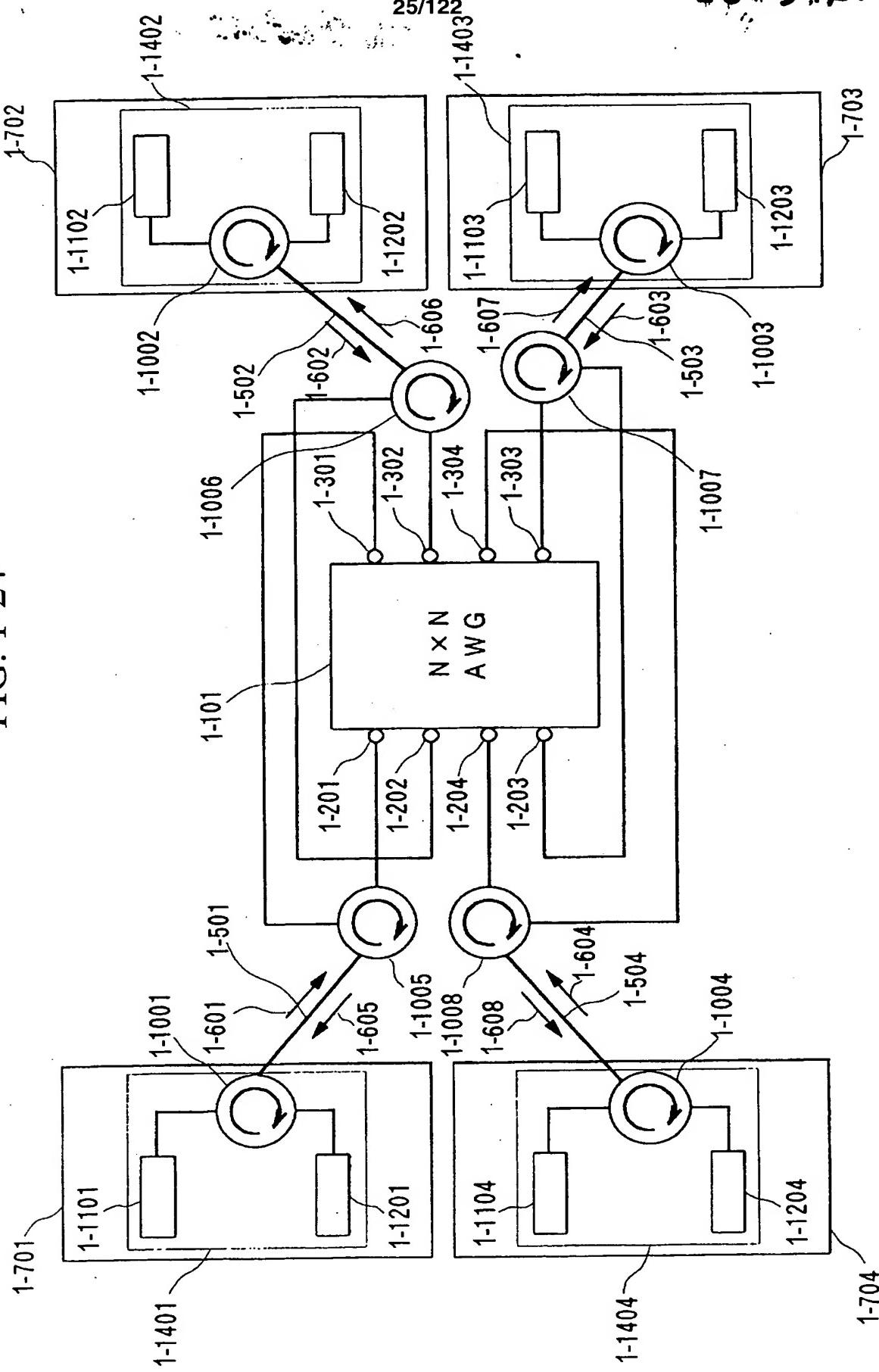


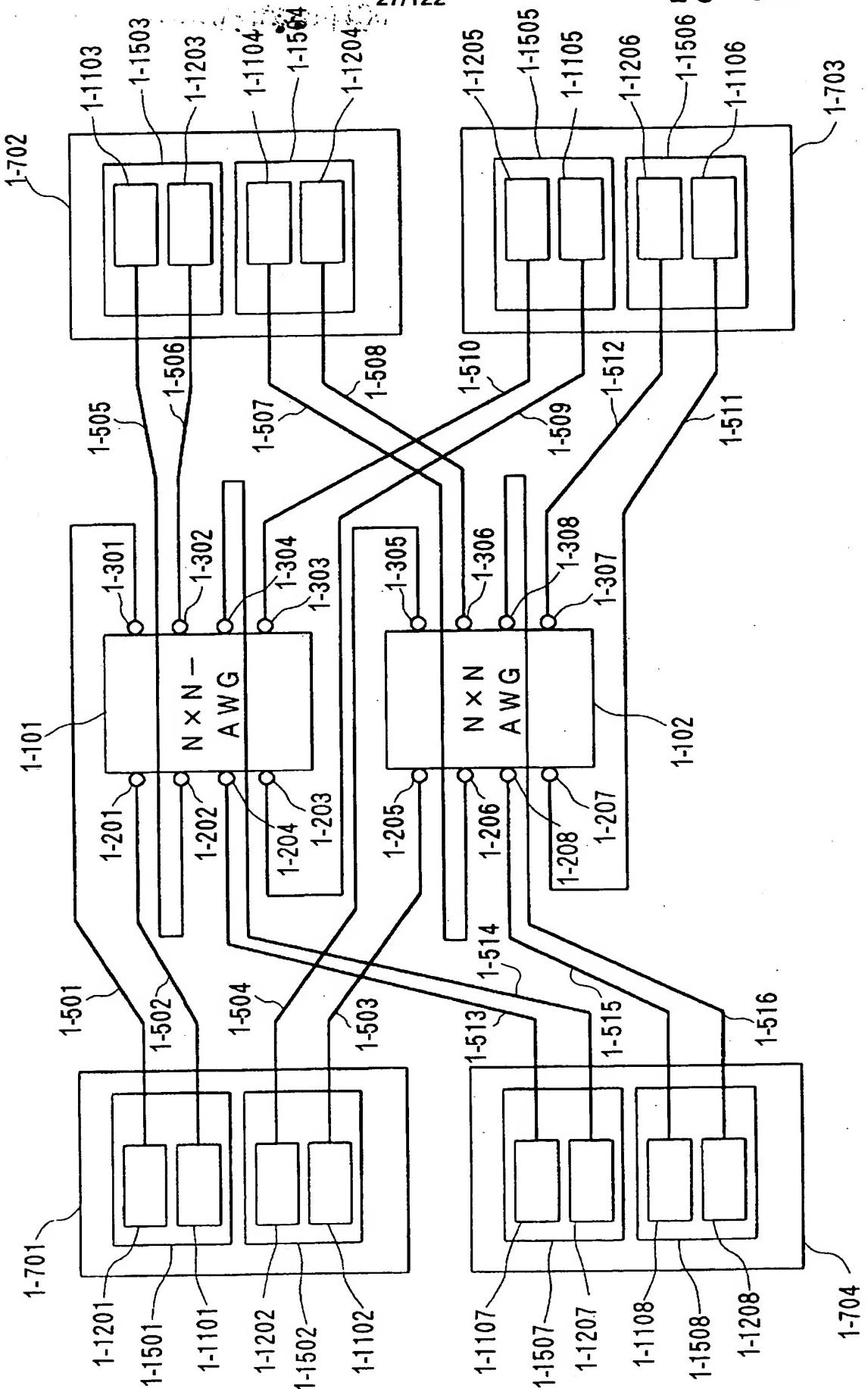
FIG. 1-25

		NETWORK-NODE EQUIPMENT (RECEIVING)			
		1-701	1-702	1-703	1-704
NETWORK-NODE EQUIPMENT (TRANSMITTING)	1-701	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$
	1-702	$\lambda 4$	$\lambda 1$	$\lambda 2$	$\lambda 3$
	1-703	$\lambda 3$	$\lambda 4$	$\lambda 1$	$\lambda 2$
	1-704	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 1$

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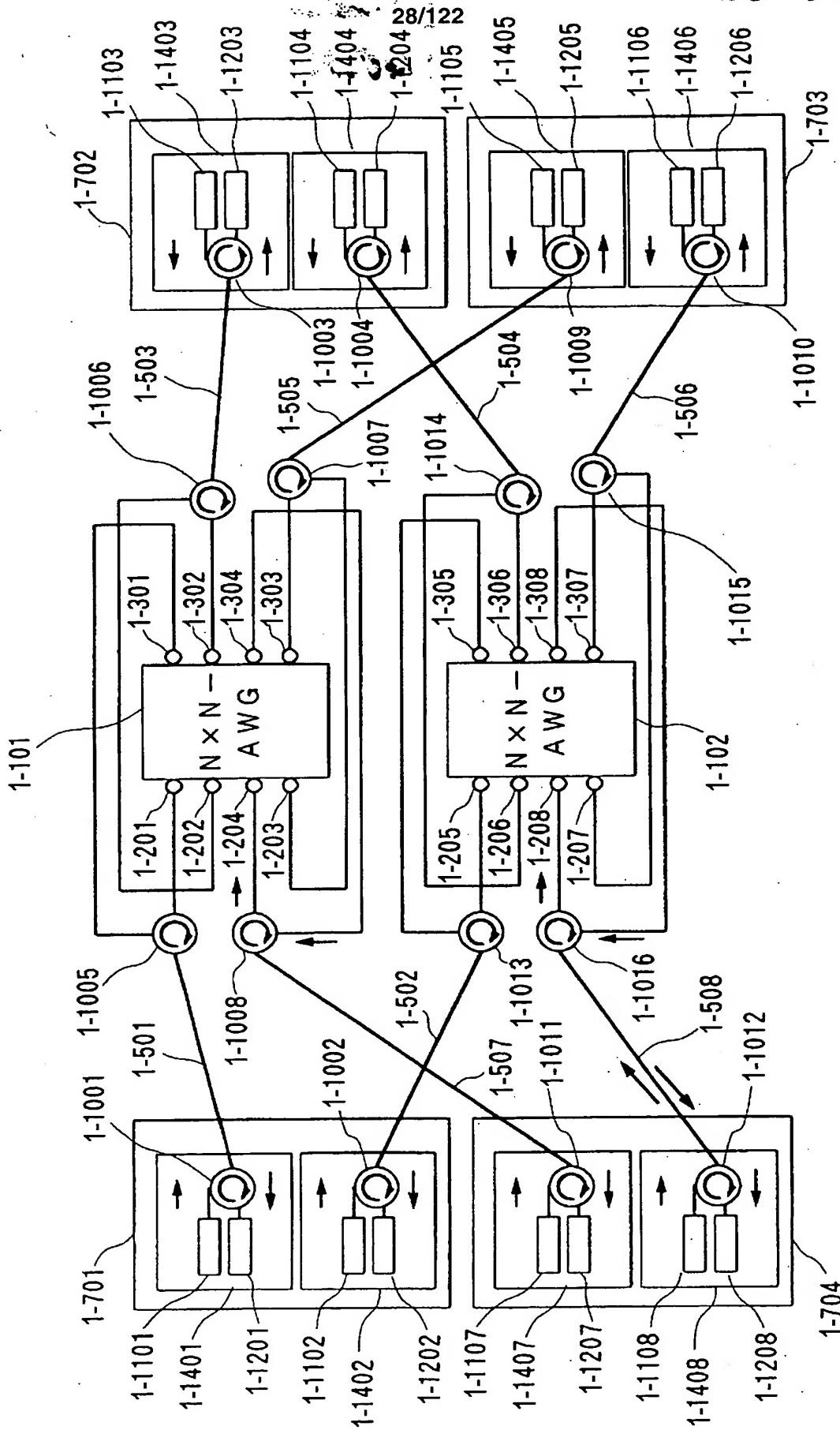
101542316

FIG. 1-26



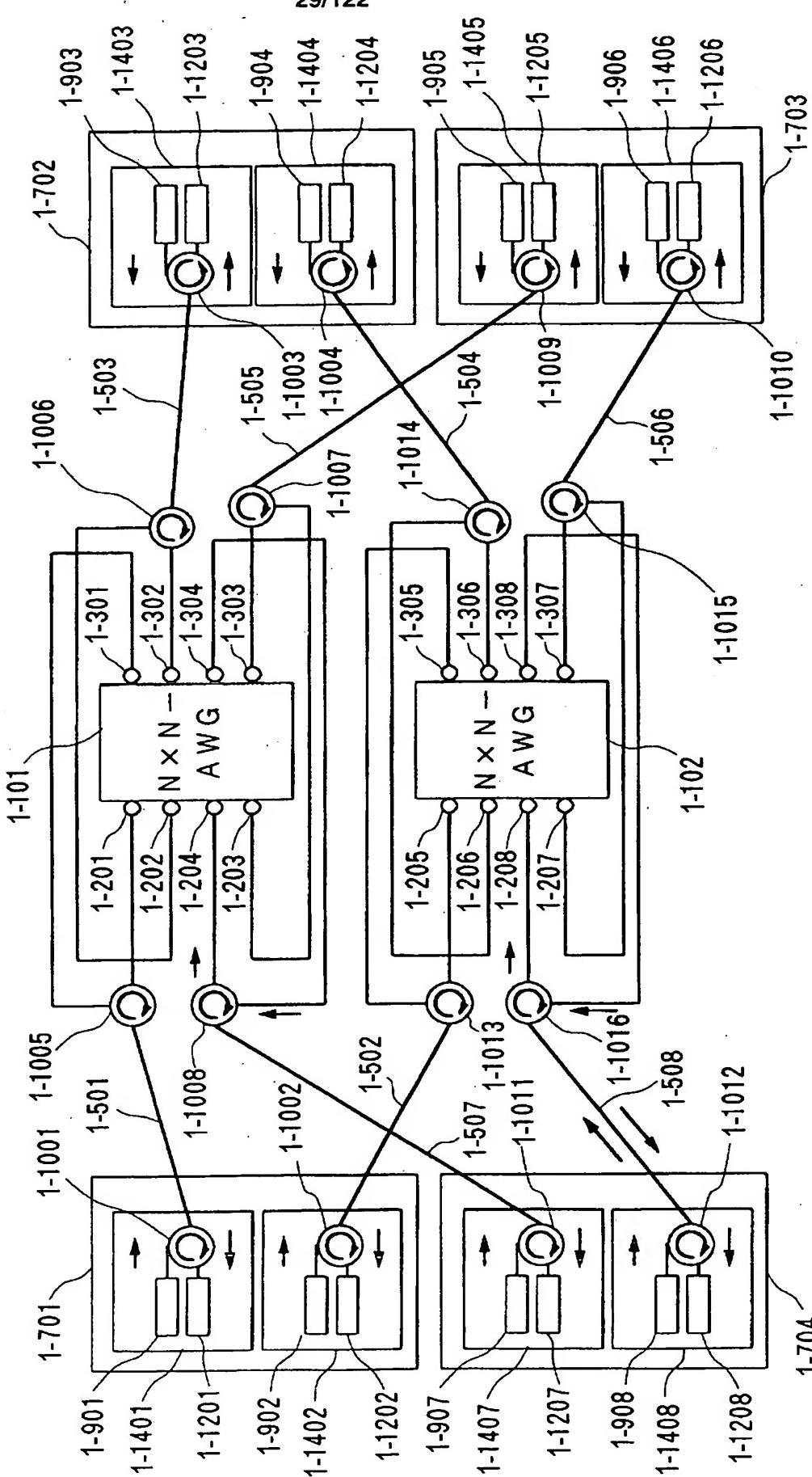
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FIG. 1-27



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FIG. 1-28



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FIG. 1-29

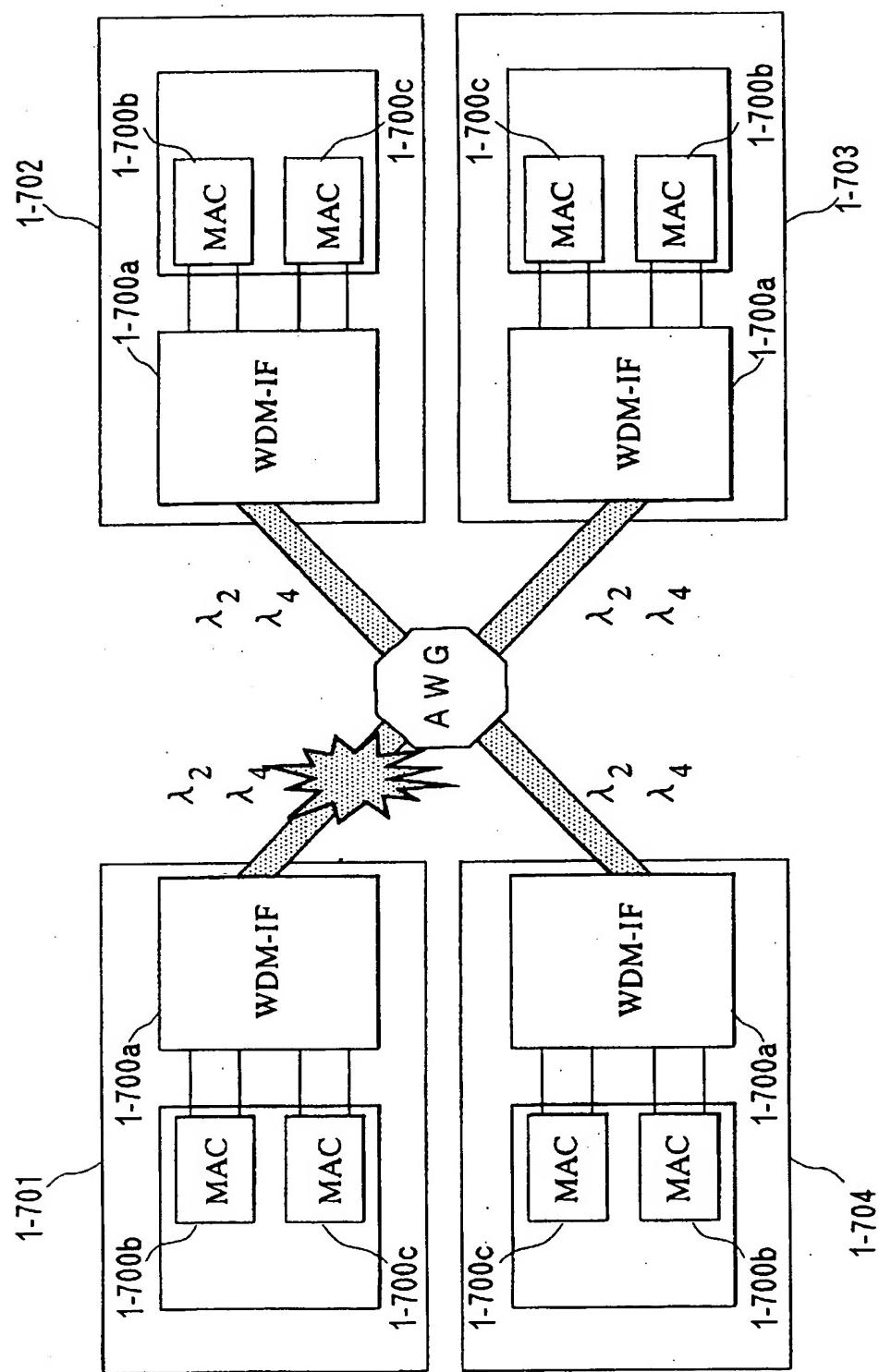
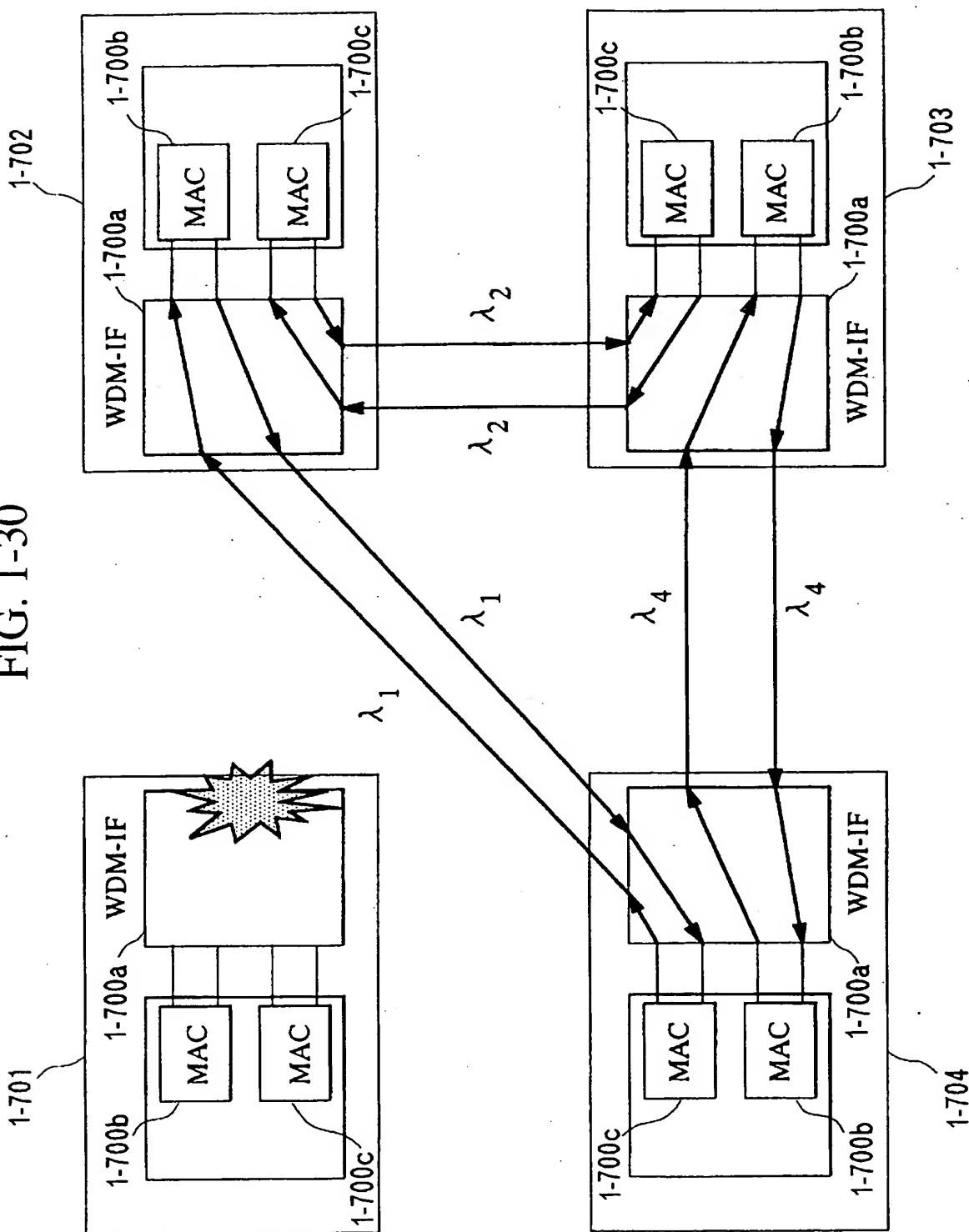
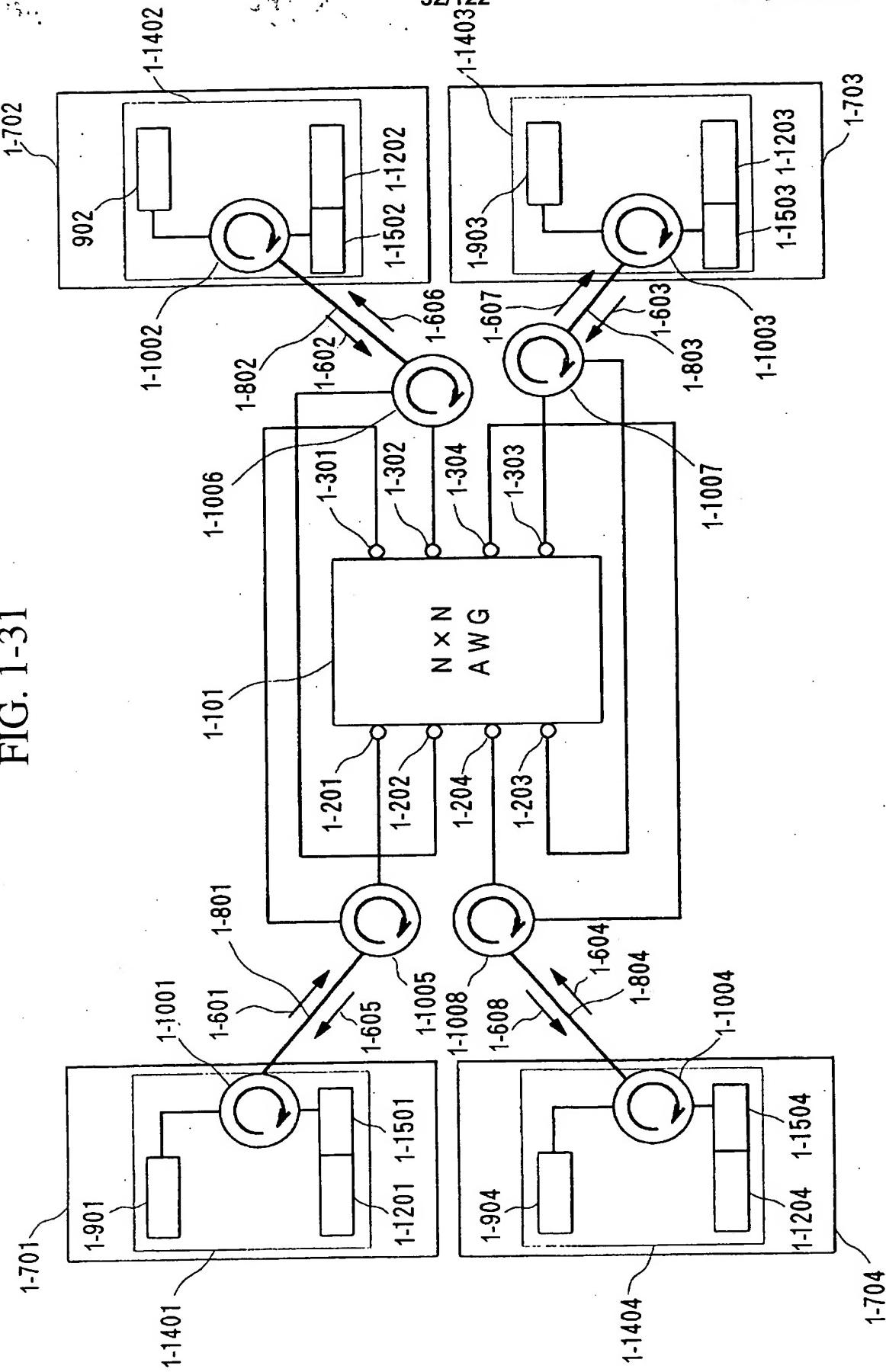


FIG. 1-30



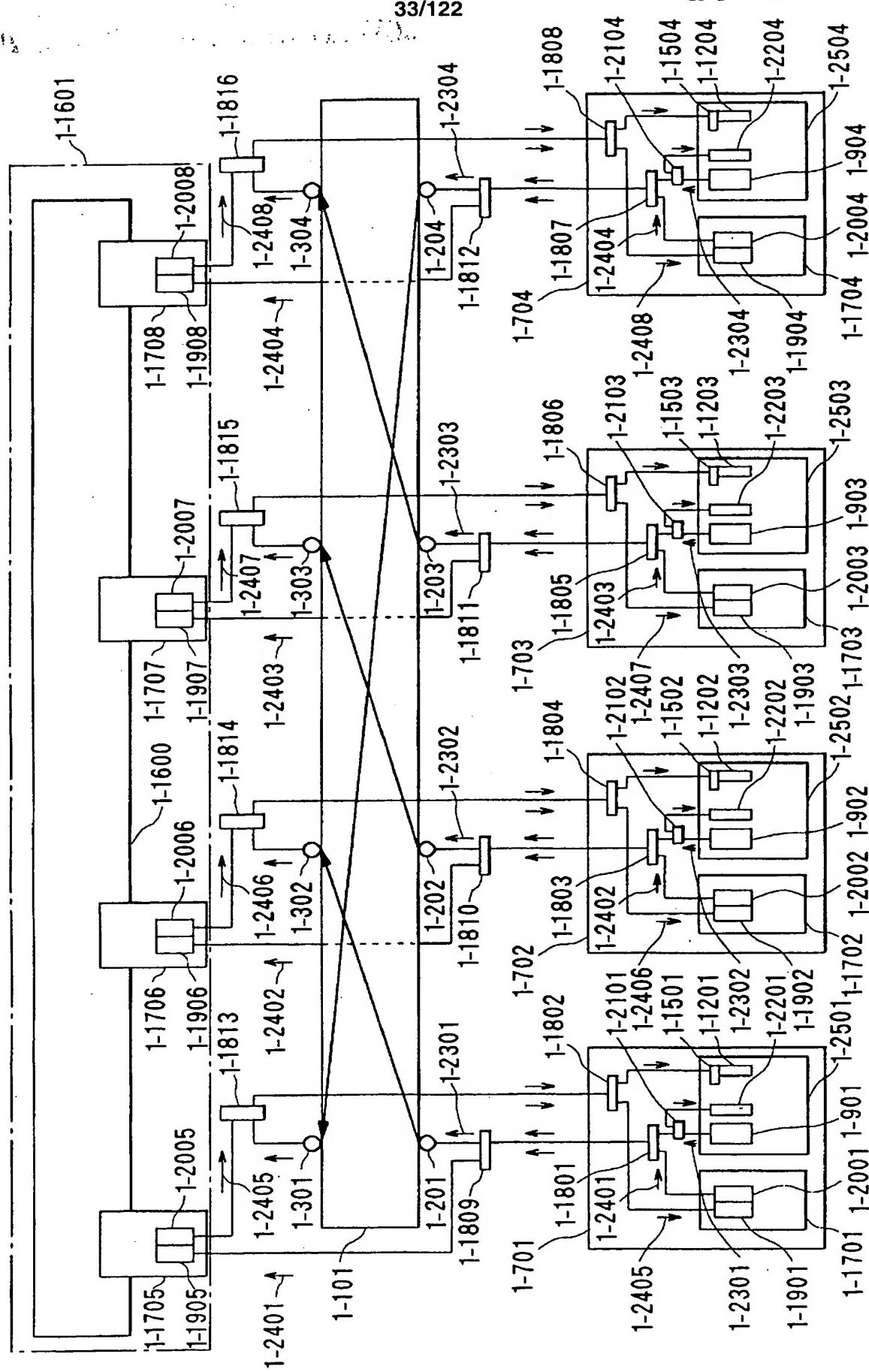
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FIG. 1-31



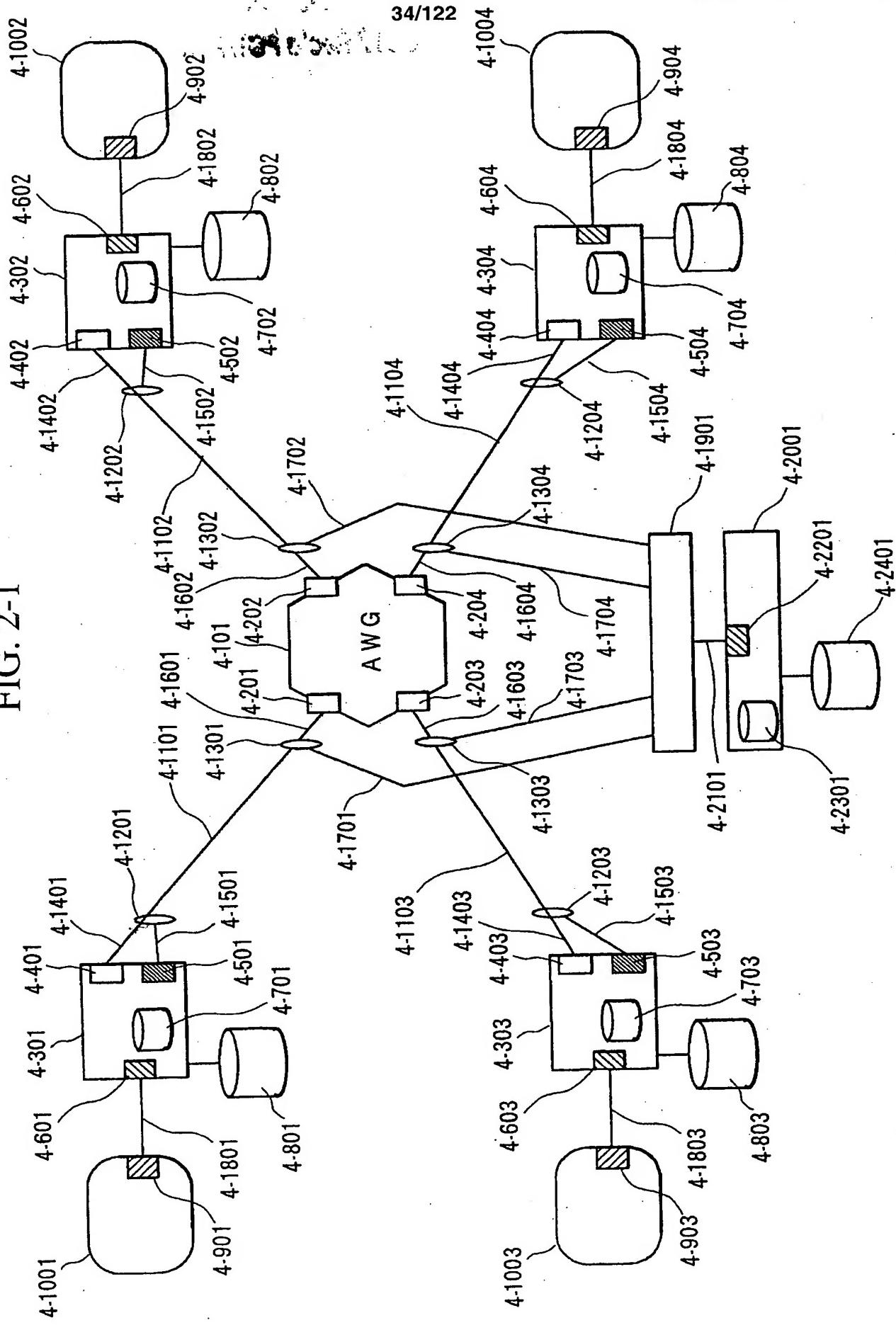
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FIG. 1-32



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FIG. 2-1



101542316

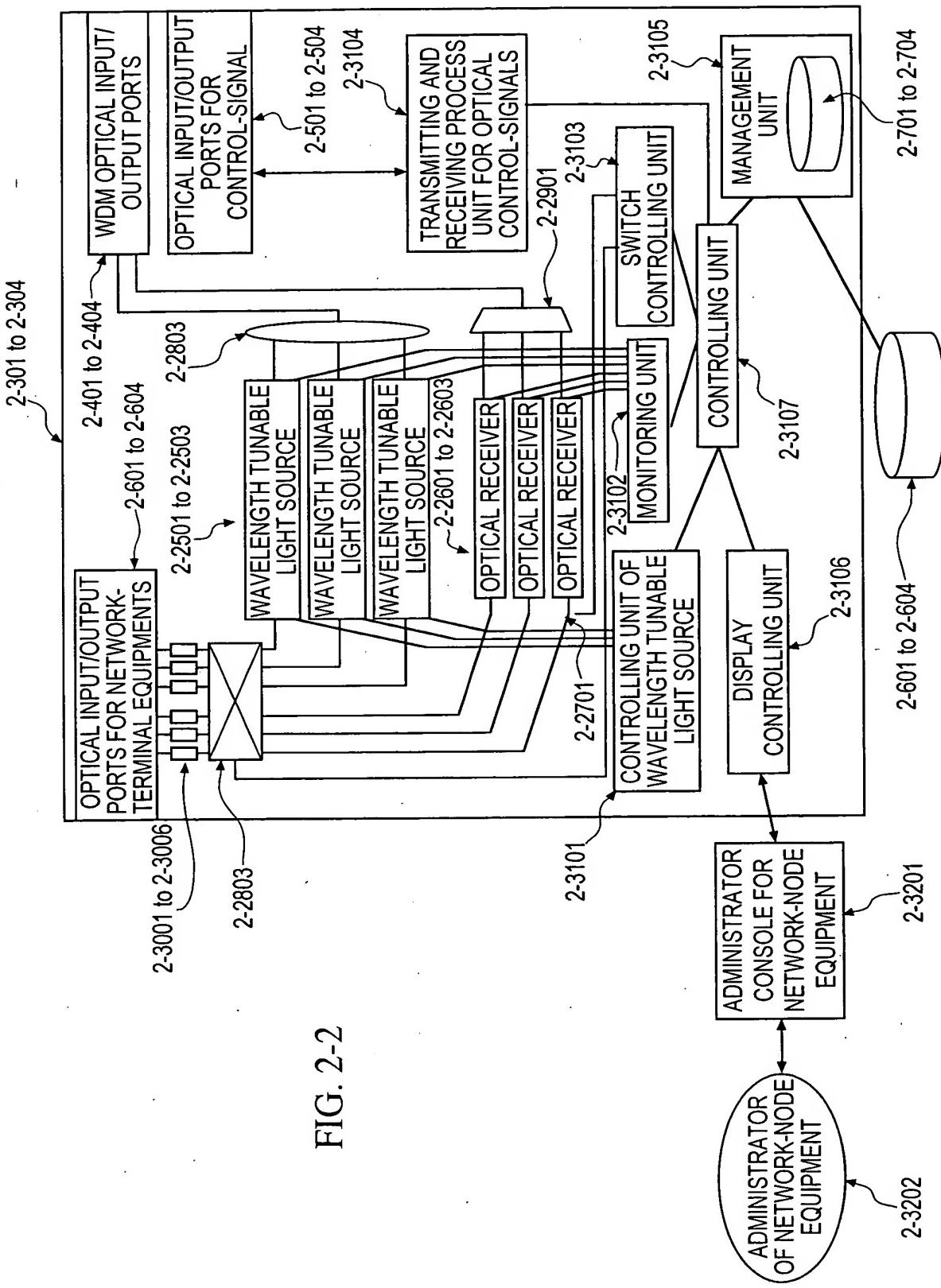
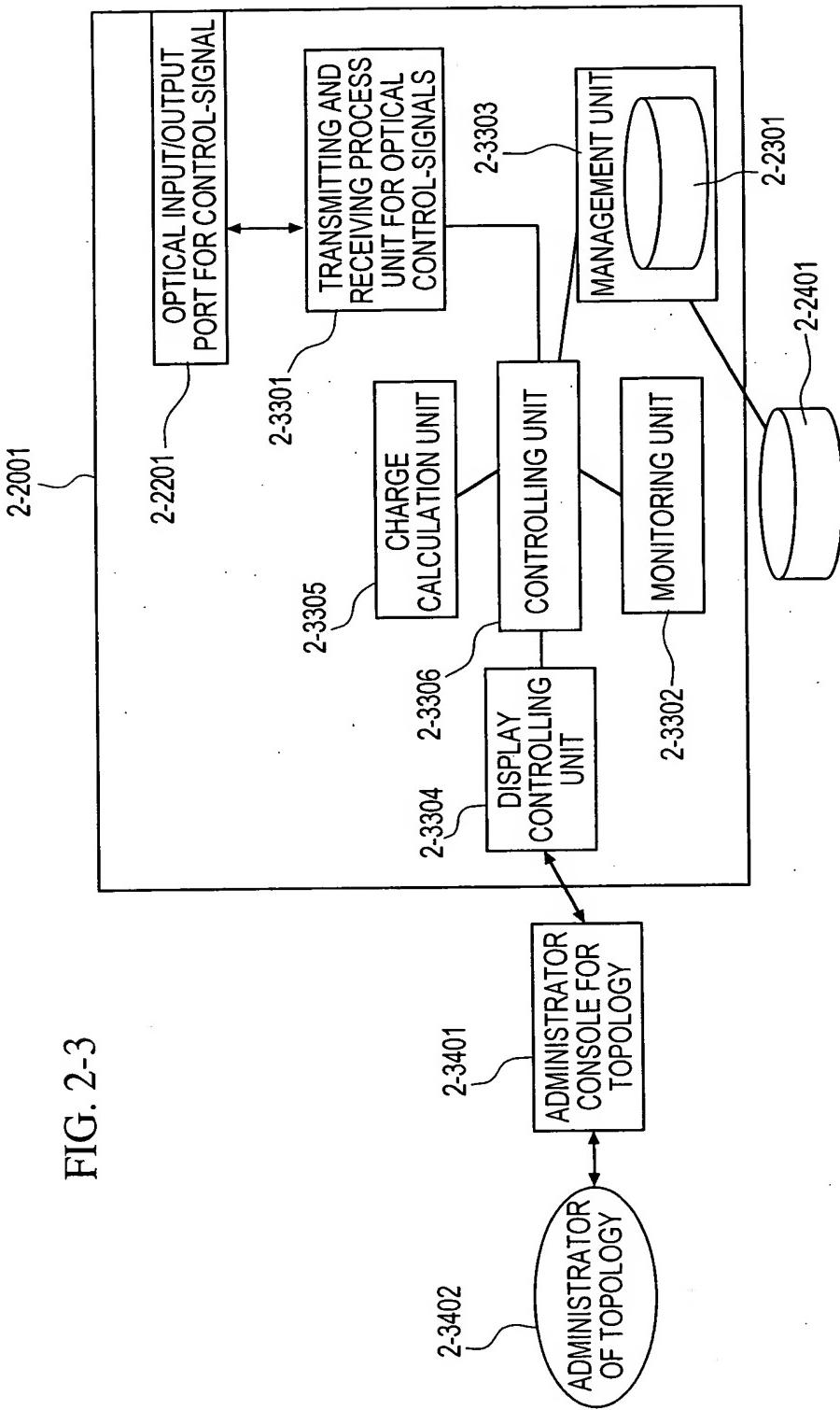


FIG. 2-2

STRUCTURE OF NETWORK-NODE EQUIPMENT

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FIG. 2-4

The diagram illustrates a sequence of three tables, each representing a specific management number (1, 2, or 10) of network equipment. Each table lists a grid interval (50GHz) and a set of usable wavelengths (λ_1 through λ_9). A large curly brace on the right side of the tables is labeled '2-3501'.

SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT	GRID INTERVAL	USABLE WAVELENGTH						
1	50GHz	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7
SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT	GRID INTERVAL	USABLE WAVELENGTH						
2	50GHz	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7
10	50GHz	λ_1	λ_2	λ_3	λ_4	λ_5	λ_6	λ_7

FIG. 2-5

2-3502

SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT	GRID INTERVAL	USABLE WAVELENGTH						
		$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
1	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
2	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
3	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
4	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
5	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
6	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
7	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
8	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
9	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$
10	50GHz	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$

FIG. 2-6

2-3601

	MESH	MESH	MESH
TYPE OF LOGICAL NETWORK TOPOLOGY			
SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT	1	2	
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT	1	2	
USER ID	1	1	
WAVELENGTH IN USE	λ_2	λ_2	λ_2
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	2	3	4
TRANSMITTING STATUS OF WDM SIGNAL	0k	0k	0k
RECEIVING STATUS OF WDM SIGNAL	0k	0k	0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	3	3	3
ADDING BANDWIDTH OF LINK			
LENGTH OF TIME FOR INCREASING BANDWIDTH			

	MESH	MESH	RING	RING	RING, STAR	STAR	STAR	STAR
	3	4	5	6	7	8	9	10
	3	4	1	2	3	4	5	6
	1	1	2	2	2	2	2	2
	λ_2							
	4	1	3	1	2	6	5	8
	0k							
	0k							
	0k							
	3	3	2	2	5	1	1	1

FIG. 2-7

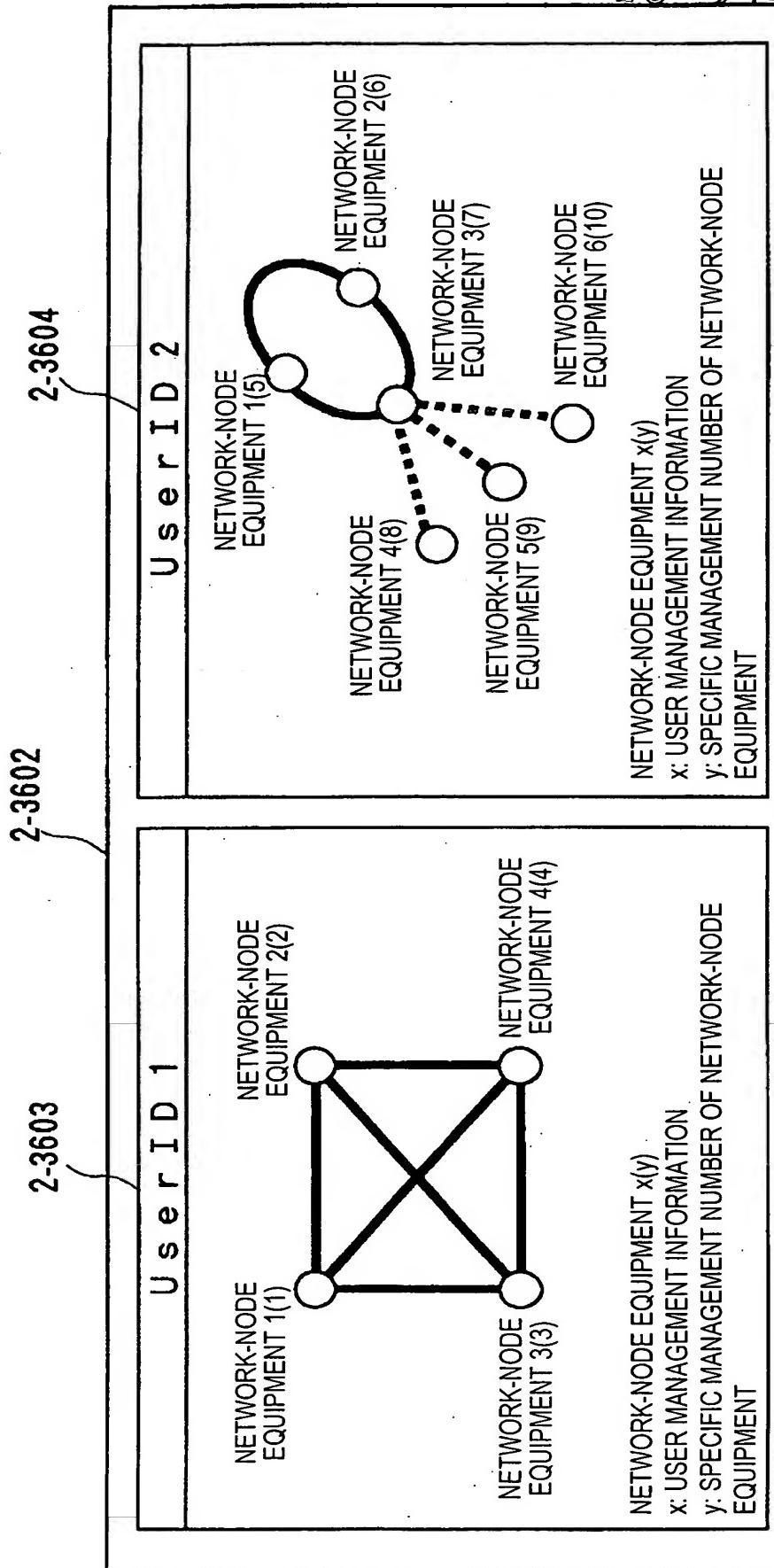


FIG. 2-8

2-3605

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	12	0	A
1	2003.02	0	0	12	0	A
1	2003.03	0	0	12	0	A
1	2003.04	0	0	12	0	A
1	2003.05	0	0	12	0	A
2	2003.01	0	0	12	0	A
2	2003.02	0	0	12	0	A
2	2003.03	0	0	12	0	A
2	2003.04	0	0	12	0	A
2	2003.05	0	0	12	0	A

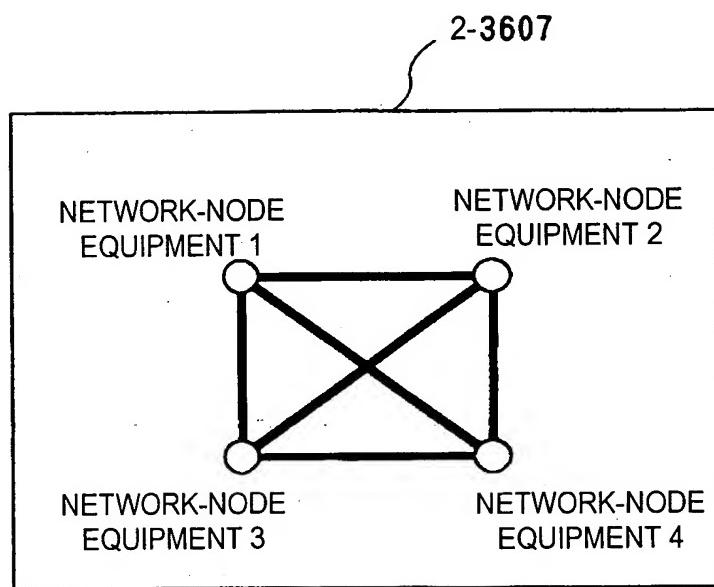
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FIG. 2-9

2-3606

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FIG. 2-10



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FIG. 2-11
2-3608

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	12	0	A
1	2003.02	0	0	12	0	A
1	2003.03	0	0	12	0	A
1	2003.04	0	0	12	0	A
1	2003.05	0	0	12	0	A

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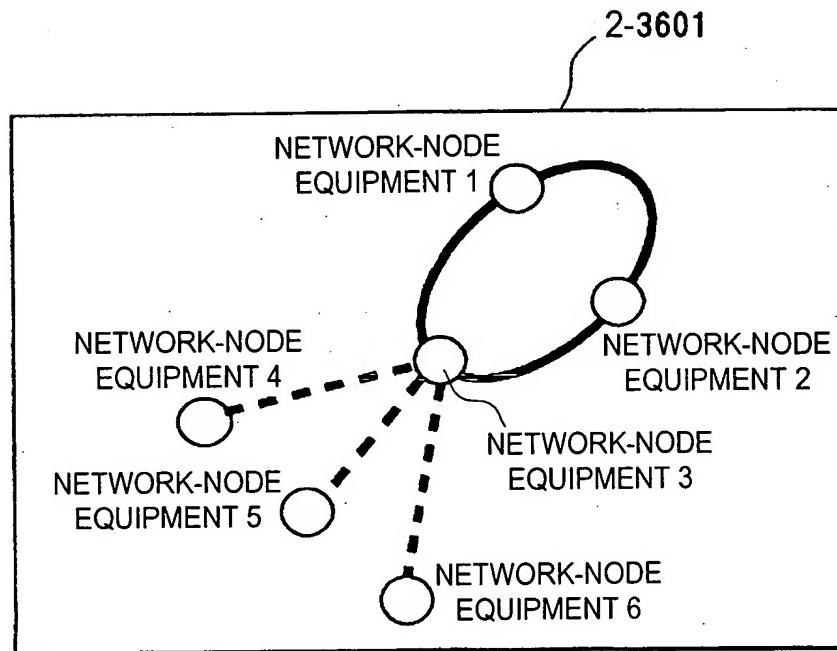
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FIG. 2-12

2-3609

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FIG. 2-13



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FIG. 2-14

2-3611

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
2	2003.01	0	0	12	0	A
2	2003.02	0	0	12	0	A
2	2003.03	0	0	12	0	A
2	2003.04	0	0	12	0	A
2	2003.05	0	0	12	0	A

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FIG. 2-15

2-3701

TYPE OF LOGICAL NETWORK TOPOLOGY		MESH	SATR	MESH, SATR	
SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT		1		2	
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT		1		2	
USER ID		1		1	
WAVELENGTH IN USE		λ_2	λ_3	λ_4	λ_1
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT		2	3	4	1
TRANSMITTING STATUS OF WDM SIGNAL		0k	0k	0k	0k
RECEIVING STATUS OF WDM SIGNAL		0k	0k	0k	0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT		0k	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT		3		4	
ADDING BANDWIDTH OF LINK					
LENGTH OF TIME FOR INCREASING BANDWIDTH					

MESH	MESH, SATR	SATR	RING	RING	RING, SATR	SATR	SATR
3	4	11	6	7	7	8	9
3	4	5	2	3	3	4	5
1	1	1	2	2	2	2	2
λ_4	λ_1	λ_2	λ_3	λ_i	λ_h	λ_d	λ_f
4	1	2	3	1	2	4	7
0k							
0k							
0k							
3	4						

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FIG. 2-16

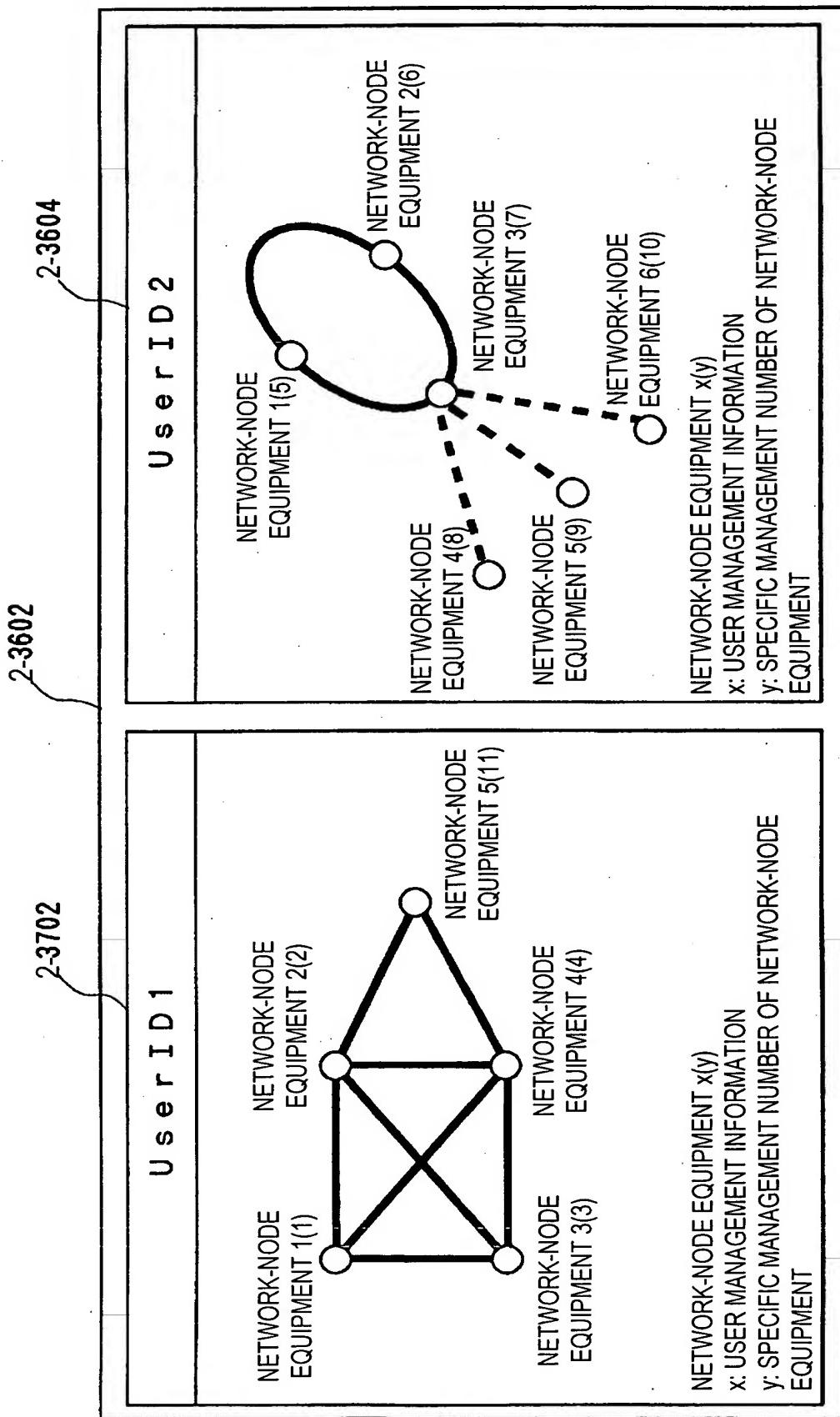


FIG. 2-17

2-3703

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	12	0	A
1	2003.02	0	0	12	0	A
1	2003.03	0	0	12	0	A
1	2003.04	1	0	14	0	B
1	2003.05	1	0	14	0	B
2	2003.01	0	0	12	0	A
2	2003.02	0	0	12	0	A
2	2003.03	0	0	12	0	A
2	2003.04	0	0	12	0	A
2	2003.05	0	0	12	0	A

2-3704

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FIG. 2-18

2-3705
2-3706

TYPE OF LOGICAL NETWORK TOPOLOGY	MESH				MESH, SATR				MESH, SATR				SATR			
	1	2	3	4	λ1	λ2	λ3	λ4	λ1	λ2	λ3	λ4	λ1	λ2	λ3	λ4
WAVELENGTH IN USE	λ2	λ3	λ4	λ1	λ3	λ4	λ1	λ2	λ4	λ1	λ2	λ3	λ1	λ2	λ3	λ4
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	2	3	4	1	3	4	1	2	11	4	1	2	3	1	2	11
TRANSMITTING STATUS OF WDM SIGNAL	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k
RECEIVING STATUS OF WDM SIGNAL	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k
CONNECTING STATUS OF NETWORK- NODE EQUIPMENT	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	3	4	3	4	3	4	3	4	3	4	3	4	3	4	3	4
ADDING BANDWIDTH OF LINK																
LENGTH OF TIME FOR INCREASING BANDWIDTH																

2-3707

FIG. 2-19

2-3708

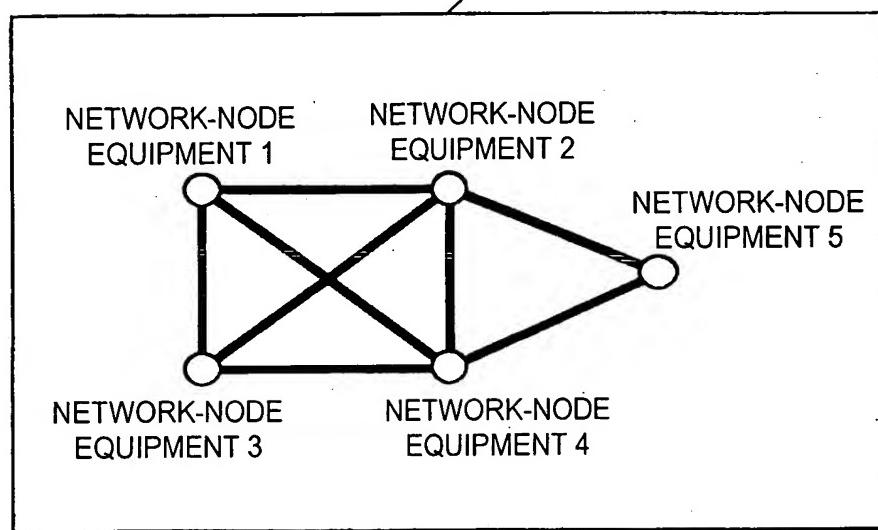


FIG. 2-20 2-3709

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	12	0	A
1	2003.02	0	0	12	0	A
1	2003.03	0	0	12	0	A
1	2003.04	1	0	14	0	B
1	2003.05	1	0	14	0	B

2-3710

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FIG. 2-21

TYPE OF LOGICAL NETWORK TOPOLOGY		MESH	MESH
SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT		1	2
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT		1	2
USER ID		1	1
WAVELENGTH IN USE		λ_2	λ_3
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT		3	4
TRANSMITTING STATUS OF WDM SIGNAL		0k	0k
RECEIVING STATUS OF WDM SIGNAL		0k	0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT		0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT		3	3
ADDING BANDWIDTH OF LINK			
LENGTH OF TIME FOR INCREASING BANDWIDTH			

2-3801

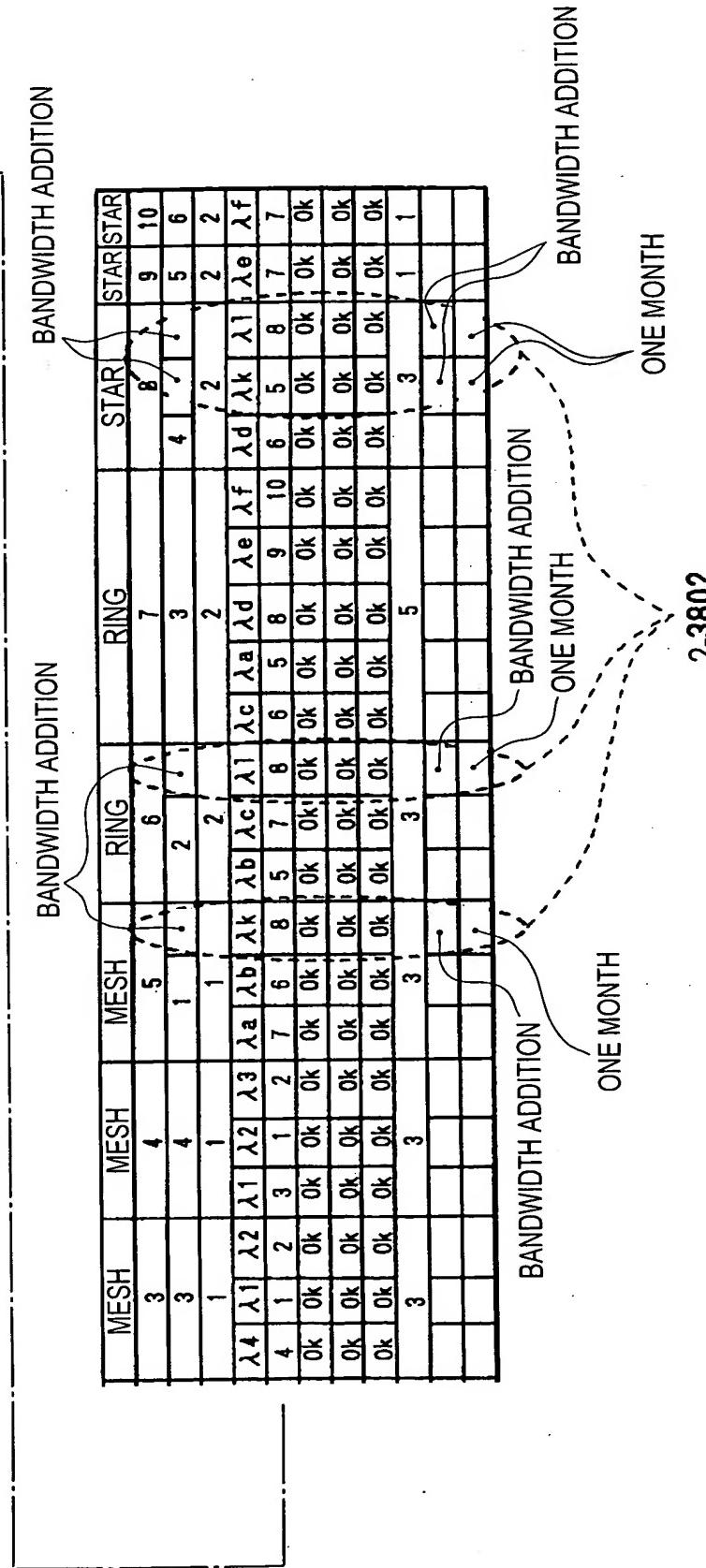
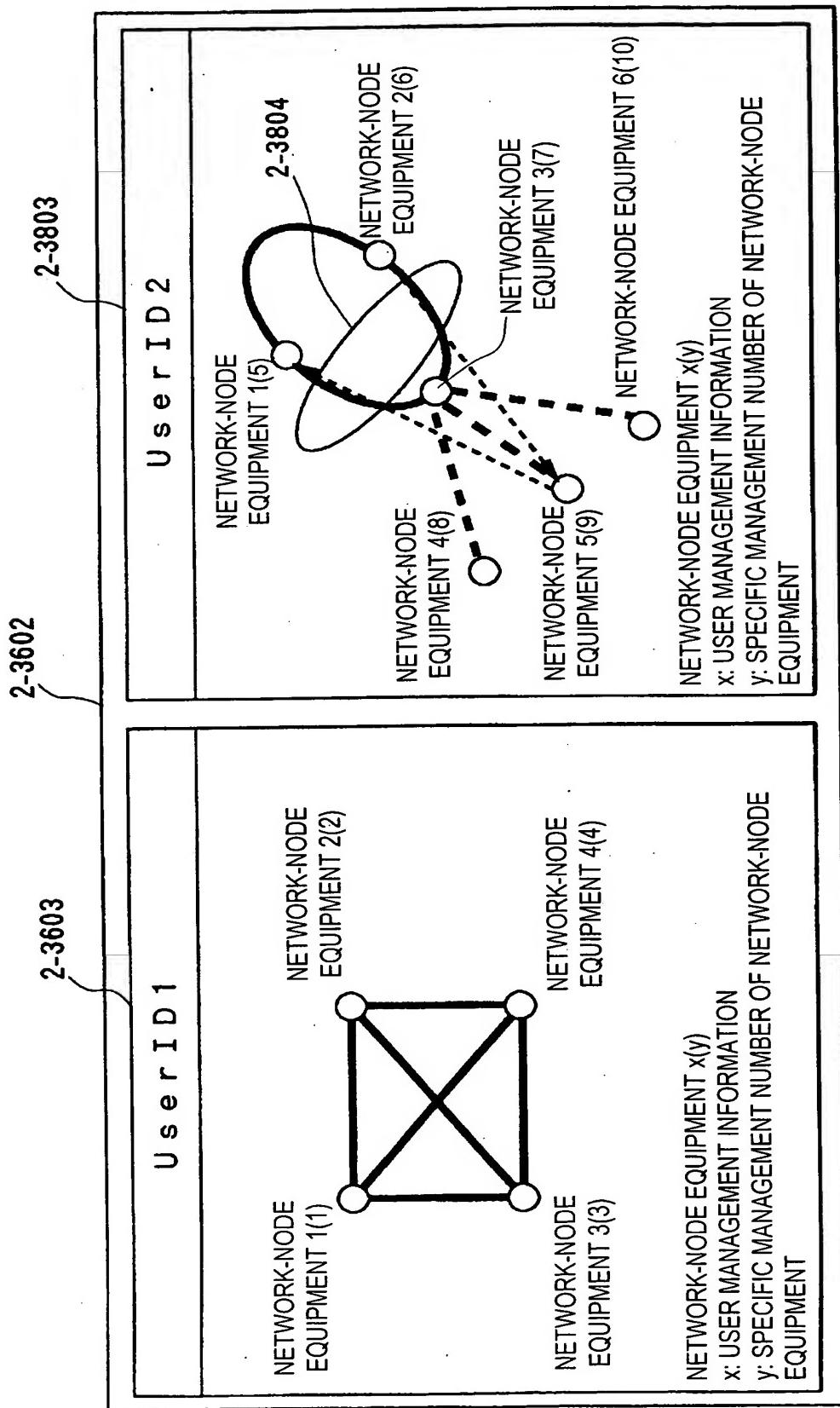


FIG. 2-22



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FIG. 2-23

2-3805

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT CHARGE
1	2003.01	0	0	12	0 A
1	2003.02	0	0	12	0 A
1	2003.03	0	0	12	0 A
1	2003.04	0	0	12	0 A
1	2003.05	0	0	12	0 A
2	2003.01	0	0	12	0 A
2	2003.02	0	0	12	0 A
2	2003.03	0	0	12	0 A
2	2003.04	0	0	12	0 A
2	2003.05	0	(1)	(16)	0 (C)

2-3806

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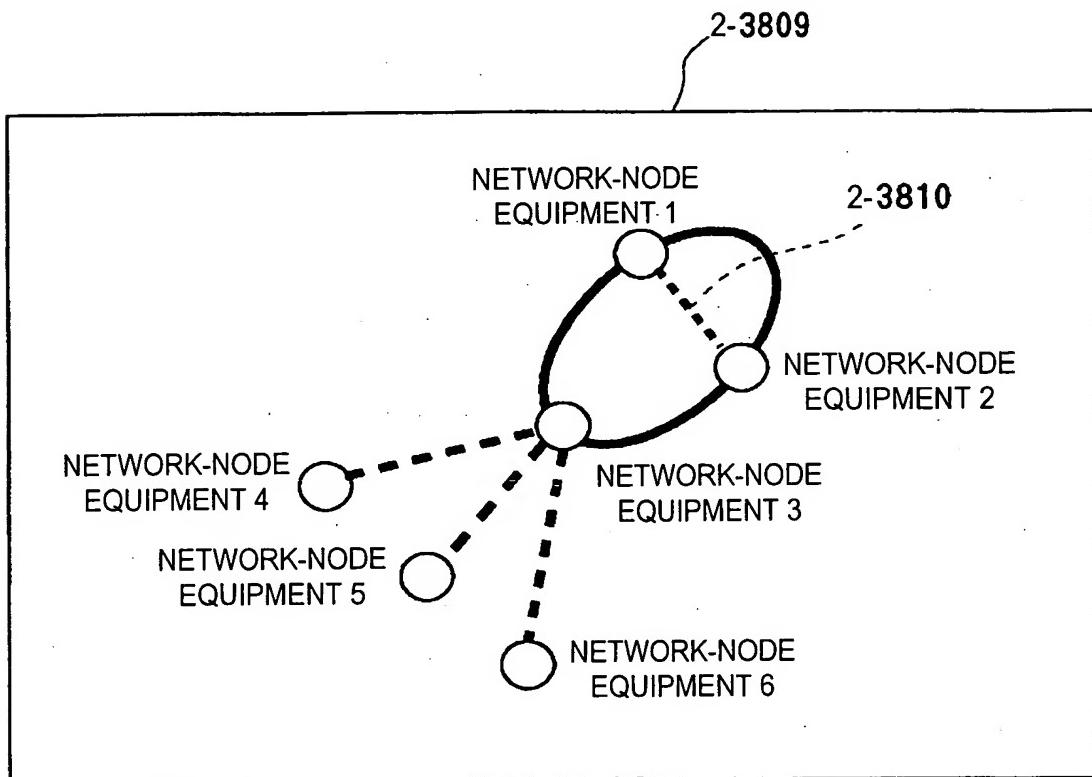
FIG. 2-24

2-3807

TYPE OF LOGICAL NETWORK TOPOLOGY	RING			RING			RING			STAR			STAR		
	1	2	3	1	2	3	1	2	3	1	2	3	1	2	3
WAVELENGTH IN USE	λ_a	λ_b	λ_k	λ_b	λ_c	λ_1	λ_c	λ_a	λ_d	λ_e	λ_f	λ_1	λ_k	λ_d	λ_e
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	3	2	1	3	2	1	4	5	6	3	•	•	•	3	3
TRANSMITTING STATUS OF WDM SIGNAL	0k														
RECEIVING STATUS OF WDM SIGNAL	0k														
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k														
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
ADDING BANDWIDTH OF LINK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
LENGTH OF TIME FOR INCREASING BANDWIDTH	ONE MONTH														

2-3808

FIG. 2-25



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FIG. 2-26

2-3811

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
2	2003.01	0	0	12	0	A
2	2003.02	0	0	12	0	A
2	2003.03	0	0	12	0	A
2	2003.04	0	0	12	0	A
2	2003.05	0	1	16	0	C

2-3812

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FIG. 2-27

	MESH
TYPE OF LOGICAL NETWORK TOPOLOGY	1
SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT	1
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT	1
USER ID	1
WAVELENGTH IN USE	$\lambda_2 \quad \lambda_3 \quad \lambda_4$
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	2 3 4
TRANSMITTING STATUS OF WDM SIGNAL	0k 0k 0k
RECEIVING STATUS OF WDM SIGNAL	0k 0k 0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k 0k 0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	3
ADDING BANDWIDTH OF LINK	
LENGTH OF TIME FOR INCREASING BANDWIDTH	

2-3901

	BANDWIDTH ADDITION								BANDWIDTH ADDITION								BANDWIDTH ADDITION							
	MESH				RING				RING, SATR				SATR				SATR				SATR			
2	1	3	4		5	6			7				8				9				10			
2	1	3	4		1	2			3				4				5				6			
1	1	1	1		1	2			2				2				2				2			
λ3	λ4	λ1	λj	λ1	λ2	λ1	λ2	λ3	λb	λb	λc	λa	λd	λe	λf	λd	λj	λk	λe	λf				
1	3	4	8	4	1	2	3	1	2	8	7	6	5	7	6	5	8	9	10	7	2	4	7	7
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
5	1	3	5		5	2			2				5				3				1			

2-3901

	BANDWIDTH ADDITION								BANDWIDTH ADDITION								BANDWIDTH ADDITION							
	MESH				RING				RING, SATR				SATR				SATR				SATR			
2	1	3	4		5	6			7				8				9				10			
2	1	3	4		1	2			3				4				5				6			
1	1	1	1		1	2			2				2				2				2			
λ3	λ4	λ1	λj	λ1	λ2	λ1	λ2	λ3	λb	λb	λc	λa	λd	λe	λf	λd	λj	λk	λe	λf				
1	3	4	8	4	1	2	3	1	2	8	7	6	5	7	6	5	8	9	10	7	2	4	7	7
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
5	1	3	5		5	2			2				5				3				1			

2-3901

	BANDWIDTH ADDITION								BANDWIDTH ADDITION								BANDWIDTH ADDITION							
	MESH				RING				RING, SATR				SATR				SATR				SATR			
2	1	3	4		5	6			7				8				9				10			
2	1	3	4		1	2			3				4				5				6			
1	1	1	1		1	2			2				2				2				2			
λ3	λ4	λ1	λj	λ1	λ2	λ1	λ2	λ3	λb	λb	λc	λa	λd	λe	λf	λd	λj	λk	λe	λf				
1	3	4	8	4	1	2	3	1	2	8	7	6	5	7	6	5	8	9	10	7	2	4	7	7
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
5	1	3	5		5	2			2				5				3				1			

2-3901

	BANDWIDTH ADDITION								BANDWIDTH ADDITION								BANDWIDTH ADDITION							
	MESH				RING				RING, SATR				SATR				SATR				SATR			
2	1	3	4		5	6			7				8				9				10			
2	1	3	4		1	2			3				4				5				6			
1	1	1	1		1	2			2				2				2				2			
λ3	λ4	λ1	λj	λ1	λ2	λ1	λ2	λ3	λb	λb	λc	λa	λd	λe	λf	λd	λj	λk	λe	λf				
1	3	4	8	4	1	2	3	1	2	8	7	6	5	7	6	5	8	9	10	7	2	4	7	7
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	0k	
5	1	3	5		5	2			2				5				3				1			

2-3901

	BANDWIDTH ADDITION								BANDWIDTH ADDITION								BANDWIDTH ADDITION							
	MESH				RING				RING, SATR				SATR				SATR				SATR			
2	1	3	4		5	6			7				8				9				10		</td	

FIG. 2-28

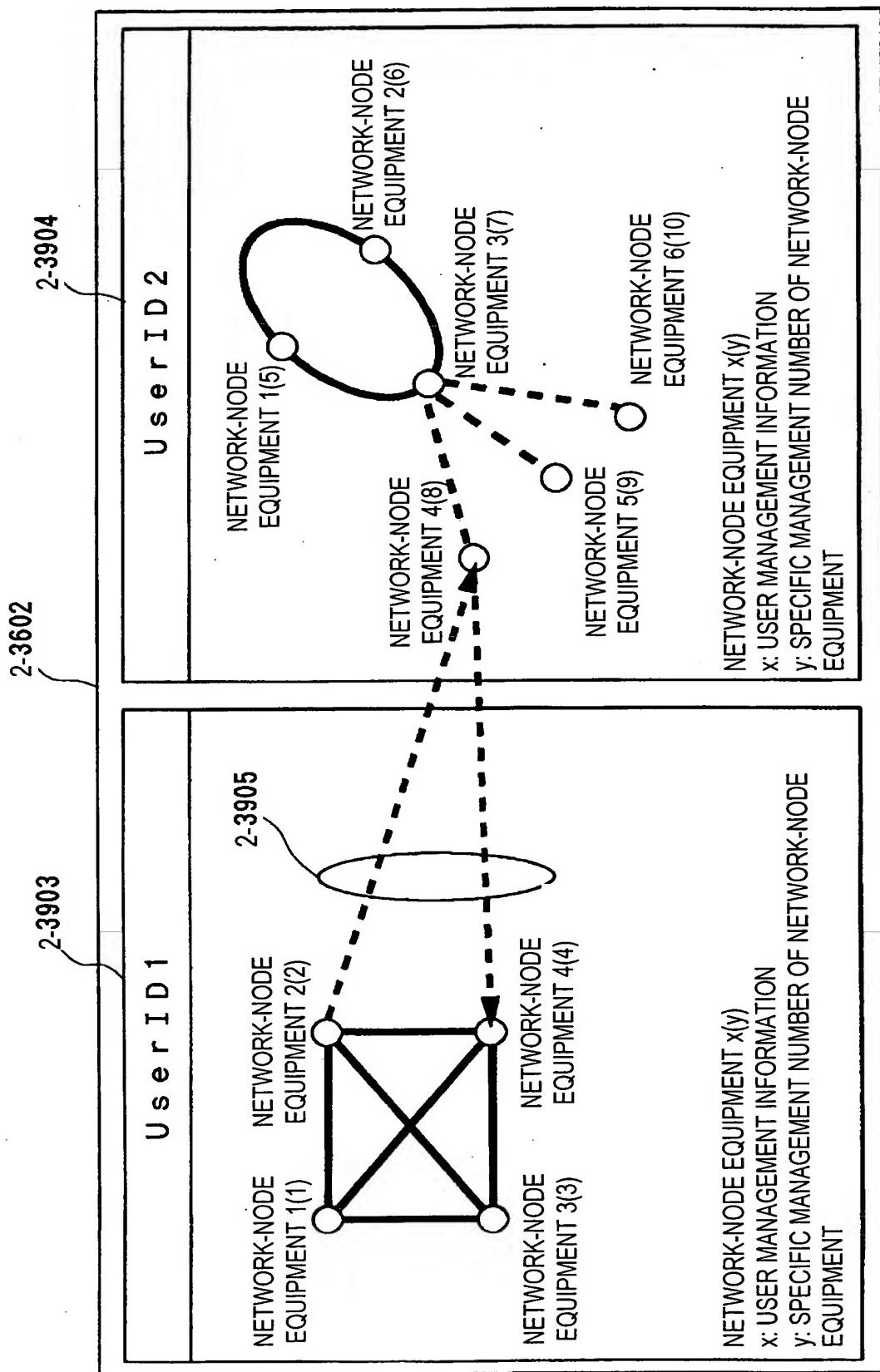


FIG. 2-29

2-3906

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	12	0	A
1	2003.02	0	0	12	0	A
1	2003.03	0	0	12	0	A
1	2003.04	0	0	12	0	A
1	2003.05	0	1	16	0	C
2	2003.01	0	0	12	0	A
2	2003.02	0	0	12	0	A
2	2003.03	0	0	12	0	A
2	2003.04	0	0	12	0	A
2	2003.05	0	0	12	<i>a</i>	D

2-3907

2-3908

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FIG. 2-30

FIG. 2-30

TYPE OF LOGICAL NETWORK TOPOLOGY	MESH	MESH	MESH	MESH
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT	1	2	3	4
WAVELENGTH IN USE	λ_2	λ_3	λ_4	λ_1
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	2	3	4	1
TRANSMITTING STATUS OF WDM SIGNAL	0k	0k	0k	0k
RECEIVING STATUS OF WDM SIGNAL	0k	0k	0k	0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	3	4	3	4
ADDING BANDWIDTH OF LINK				
LENGTH OF TIME FOR INCREASING BANDWIDTH				

BANDWIDTH ADDITION
ONE MONTH

BANDWIDTH ADDITION
ONE MONTH

BANDWIDTH ADDITION
ONE MONTH

BANDWIDTH ADDITION
ONE MONTH

2-3910
2-3909

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FIG. 2-31

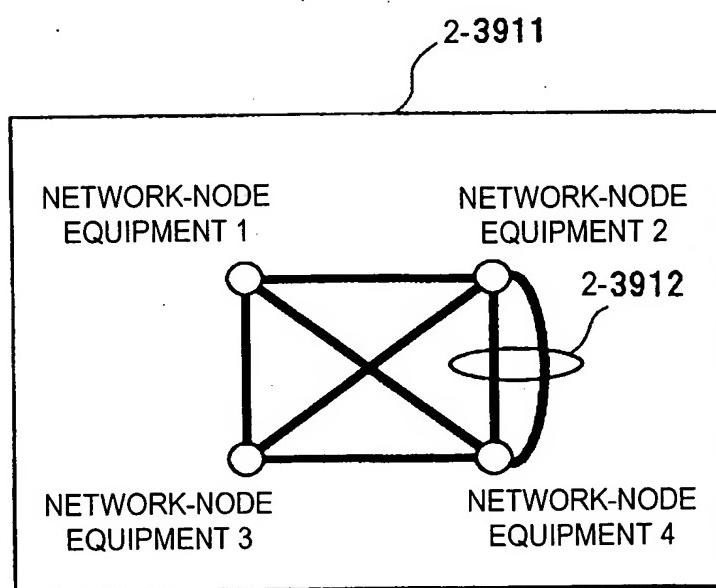


FIG. 2-32

2-3913

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	12	0	A
1	2003.02	0	0	12	0	A
1	2003.03	0	0	12	0	A
1	2003.04	0	0	12	0	A
1	2003.05	0	1	16	0	C

2-3914

10/542316

66/122

FIG. 2-33

2-3915

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
2	2003.01	0	0	12	0	A
2	2003.02	0	0	12	0	A
2	2003.03	0	0	12	0	A
2	2003.04	0	0	12	0	A
2	2003.05	0	0	12	0	D

2-3916

FIG. 2-34
2-4001

TYPE OF LOGICAL NETWORK TOPOLOGY	RING	RING	RING	RING	RING	RING
SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT	1	2	3	3	4	4
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT	1	2	3	3	4	4
USER ID	1	1	1	1	1	1
WAVELENGTH IN USE	$\lambda\delta$	$\lambda\alpha$	$\lambda\alpha$	$\lambda\beta$	$\lambda\beta$	$\lambda\gamma$
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	1	2	1	3	2	4
TRANSMITTING STATUS OF WDM SIGNAL	0k	0k	0k	0k	0k	0k
RECEIVING STATUS OF WDM SIGNAL	0k	0k	0k	0k	0k	0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k	0k	0k	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	2	2	2	2	2	2
ADDING BANDWIDTH OF LINK						
LENGTH OF TIME FOR INCREASING BANDWIDTH						

FIG. 2-35

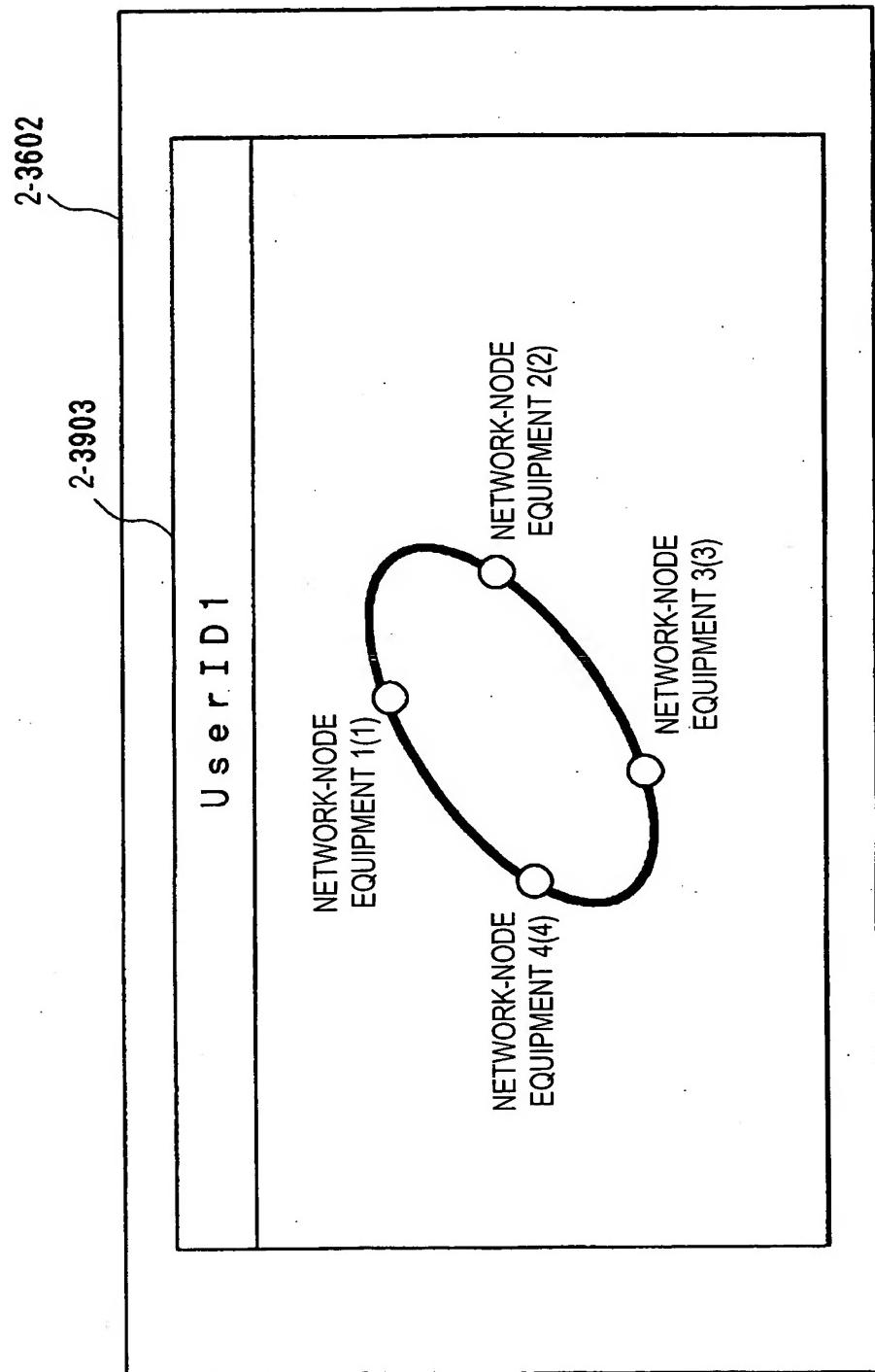
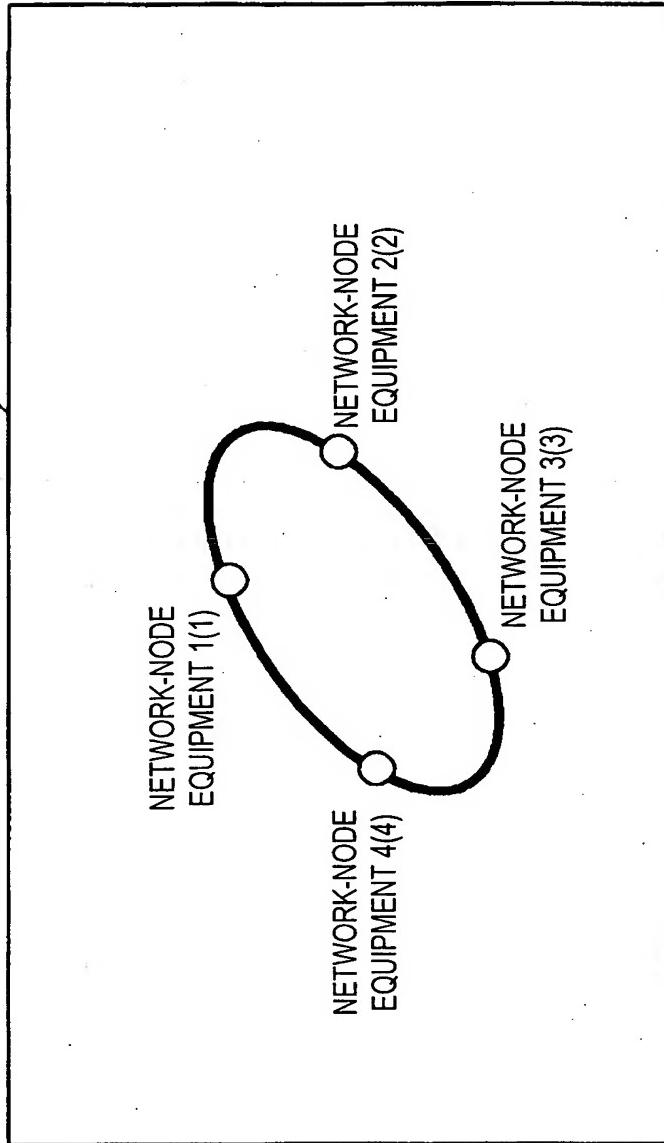


FIG. 2-36
2-4003

TYPE OF LOGICAL NETWORK TOPOLOGY	RING	RING	RING	RING	RING	RING
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT	1	2	3	3	4	
WAVELENGTH IN USE	λ_6	λ_a	λ_α	$\lambda\beta$	$\lambda\gamma$	$\lambda\gamma$
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	1	2	1	3	2	4
TRANSMITTING STATUS OF WDM SIGNAL	0k	0k	0k	0k	0k	0k
RECEIVING STATUS OF WDM SIGNAL	0k	0k	0k	0k	0k	0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k	0k	0k	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	2	2	2	2	2	
ADDING BANDWIDTH OF LINK						
LENGTH OF TIME FOR INCREASING BANDWIDTH						

FIG. 2-37
2-4004



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FIG. 2-38

TYPE OF LOGICAL NETWORK TOPOLOGY	RING	RING	RING	RING
SPECIFIC MANAGEMENT NUMBER OF NETWORK-NODE EQUIPMENT	1	2	3	4
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT	1	2	3	4
USER ID	1	1	1	1
WAVELENGTH IN USE	$\lambda\delta$	$\lambda\alpha$	$\lambda\beta$	$\lambda\gamma$
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	1	2	3	4
TRANSMITTING STATUS OF WDM SIGNAL	0k	0k	0k	0k
RECEIVING STATUS OF WDM SIGNAL	0k	0k	0k	0k
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	2	2	2	0
ADDING BANDWIDTH OF LINK				
LENGTH OF TIME FOR INCREASING BANDWIDTH				

FIG. 2-39

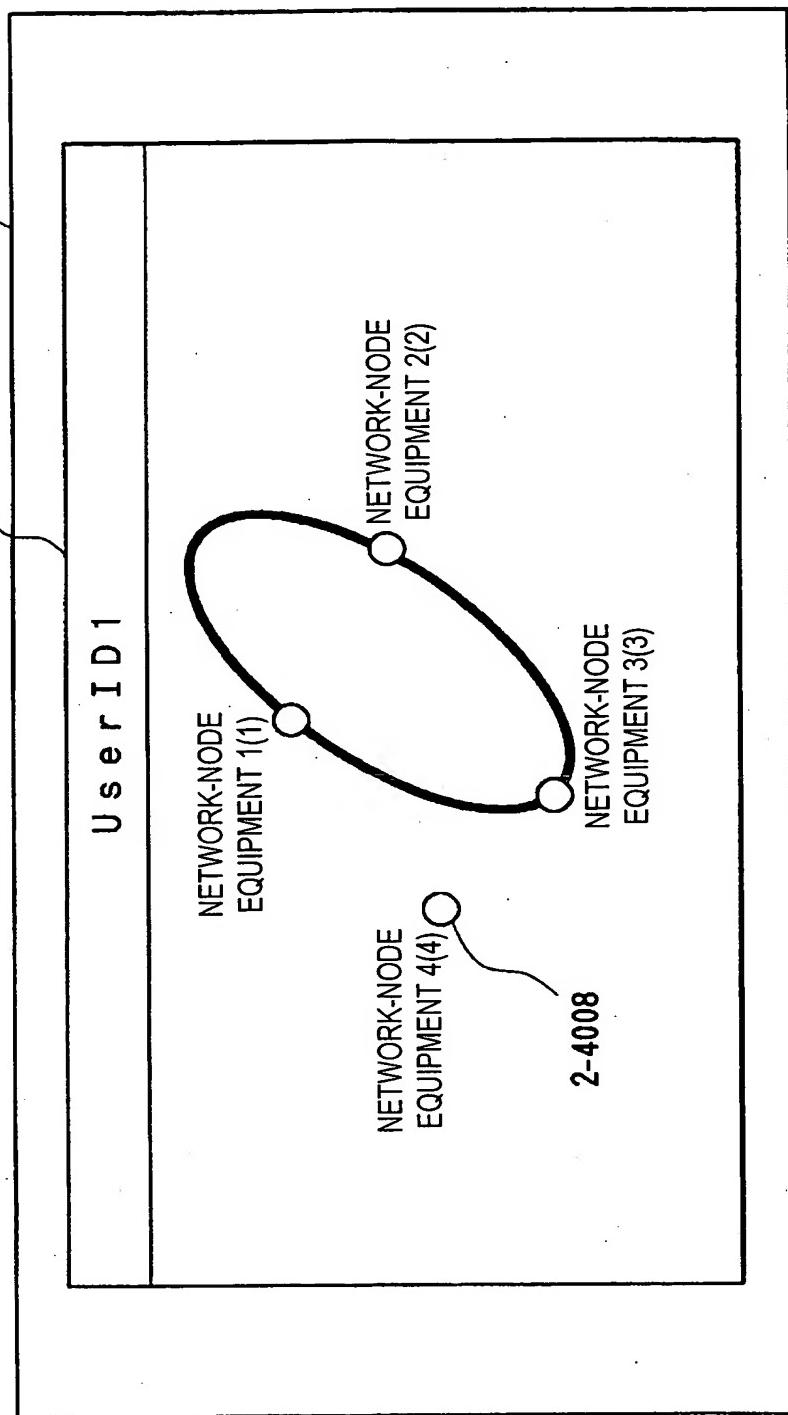


FIG. 2-40

2-4009

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	8	0	E
1	2003.02	0	0	8	0	E
1	2003.03	0	0	8	0	E
1	2003.04	0	0	8	0	E
1	2003.05	-1	0	6	00	F

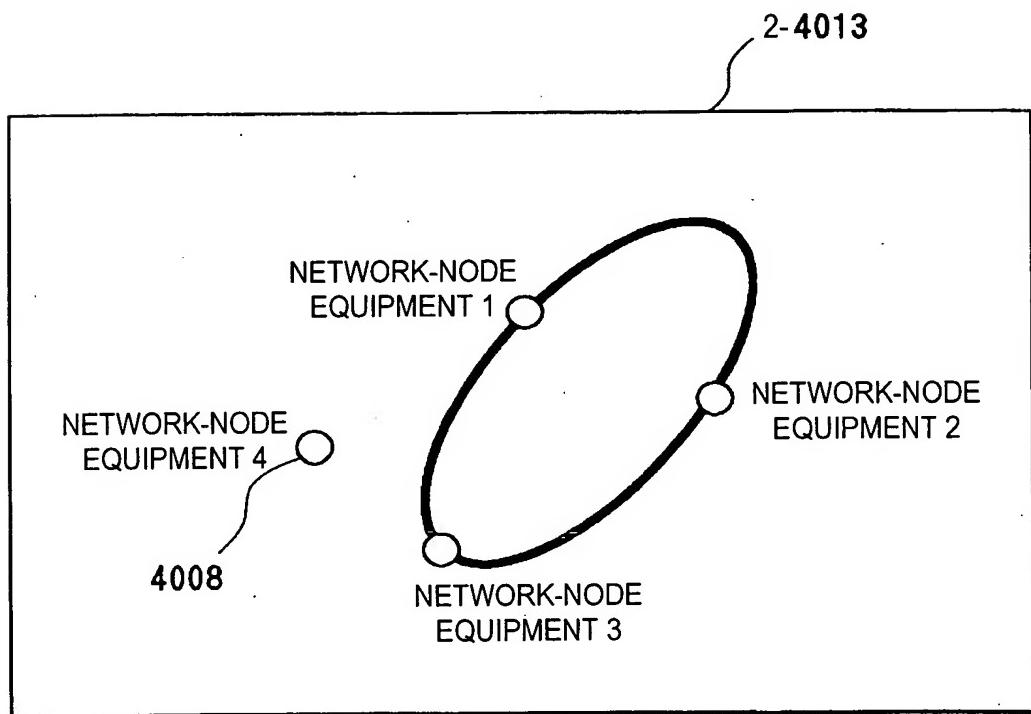
2-4010

101542316

FIG. 2-41
2-4011

TYPE OF LOGICAL NETWORK TOPOLOGY	RING 1	RING 2	RING 3	RING 4	RING
SPECIFIC USER NUMBER OF NETWORK-NODE EQUIPMENT	$\lambda\delta$	$\lambda\alpha$	$\lambda\beta$	$\lambda\gamma$	$\lambda\delta$
WAVELENGTH IN USE	1	2	3	4	2-4011
SPECIFIC MANAGEMENT NUMBER OF OTHER END OF NETWORK-NODE EQUIPMENT	1	2	1	3	
TRANSMITTING STATUS OF WDM SIGNAL	0k	0k	0k	0k	0ff
RECEIVING STATUS OF WDM SIGNAL	0k	0k	0k	0k	NG
CONNECTING STATUS OF NETWORK-NODE EQUIPMENT	0k	0k	0k	0k	0k
NUMBER OF OPTICAL LINKS OF NETWORK-NODE EQUIPMENT	2	2	2	0	
ADDING BANDWIDTH OF LINK					
LENGTH OF TIME FOR INCREASING BANDWIDTH					

FIG. 2-42



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FIG. 2-43

2-4014

USER ID	YEAR AND MONTH	INCREASED/DECREASED NUMBER OF NETWORK-NODE EQUIPMENTS	NUMBER OF INCREASING BANDWIDTH	TOTAL NUMBER OF WAVELENGTH PATH LINKS	DISCOUNT	CHARGE
1	2003.01	0	0	8	0	E
1	2003.02	0	0	8	0	E
1	2003.03	0	0	8	0	E
1	2003.04	0	0	8	0	E
1	2003.05	-1	0	6	0	F

2-4015

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FIG. 3-1

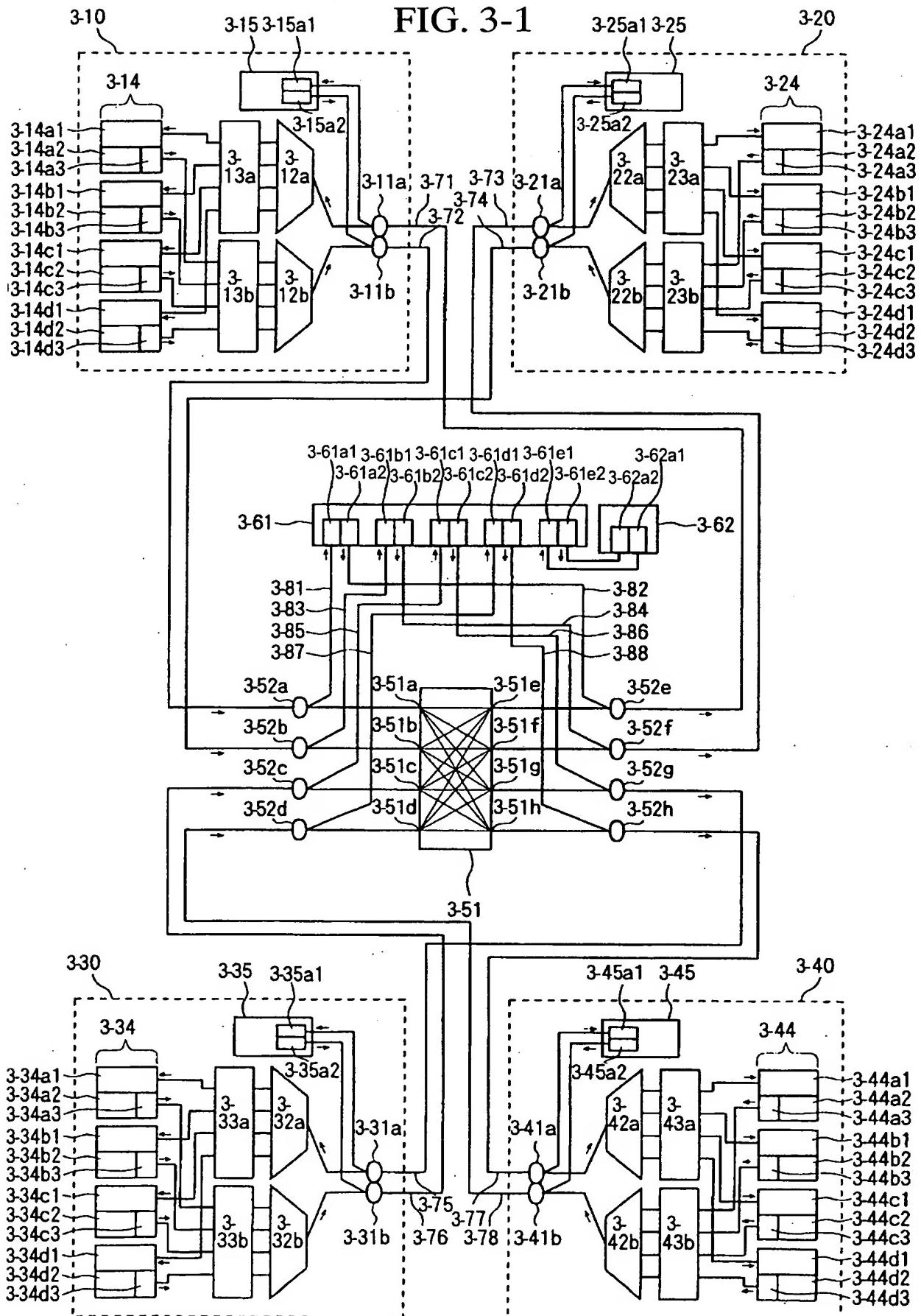


FIG. 3-2A

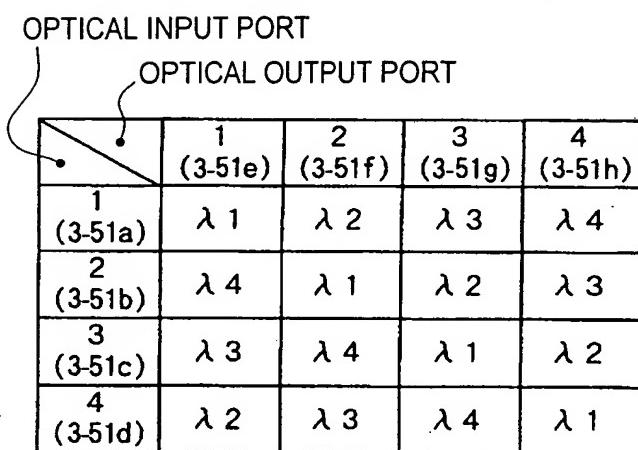


FIG. 3-2B

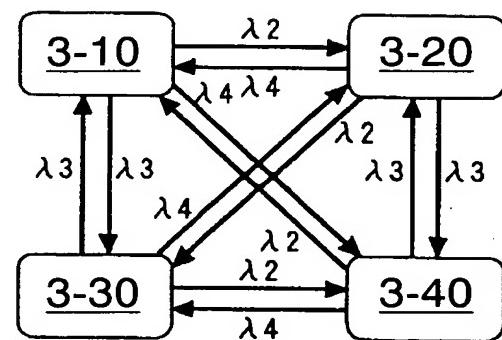


FIG. 3-3A

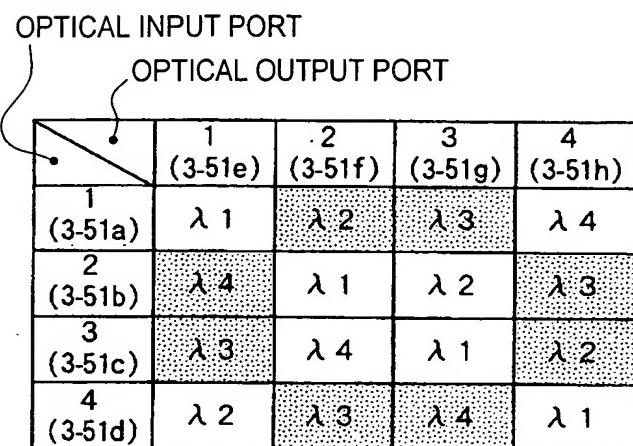
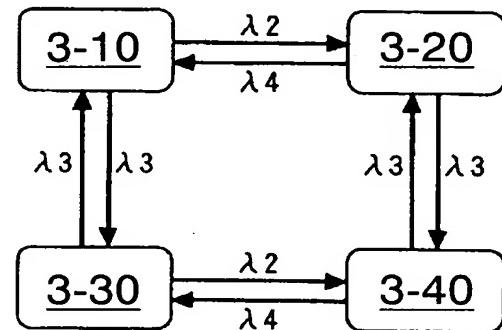


FIG. 3-3B



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 FIG. 3-4

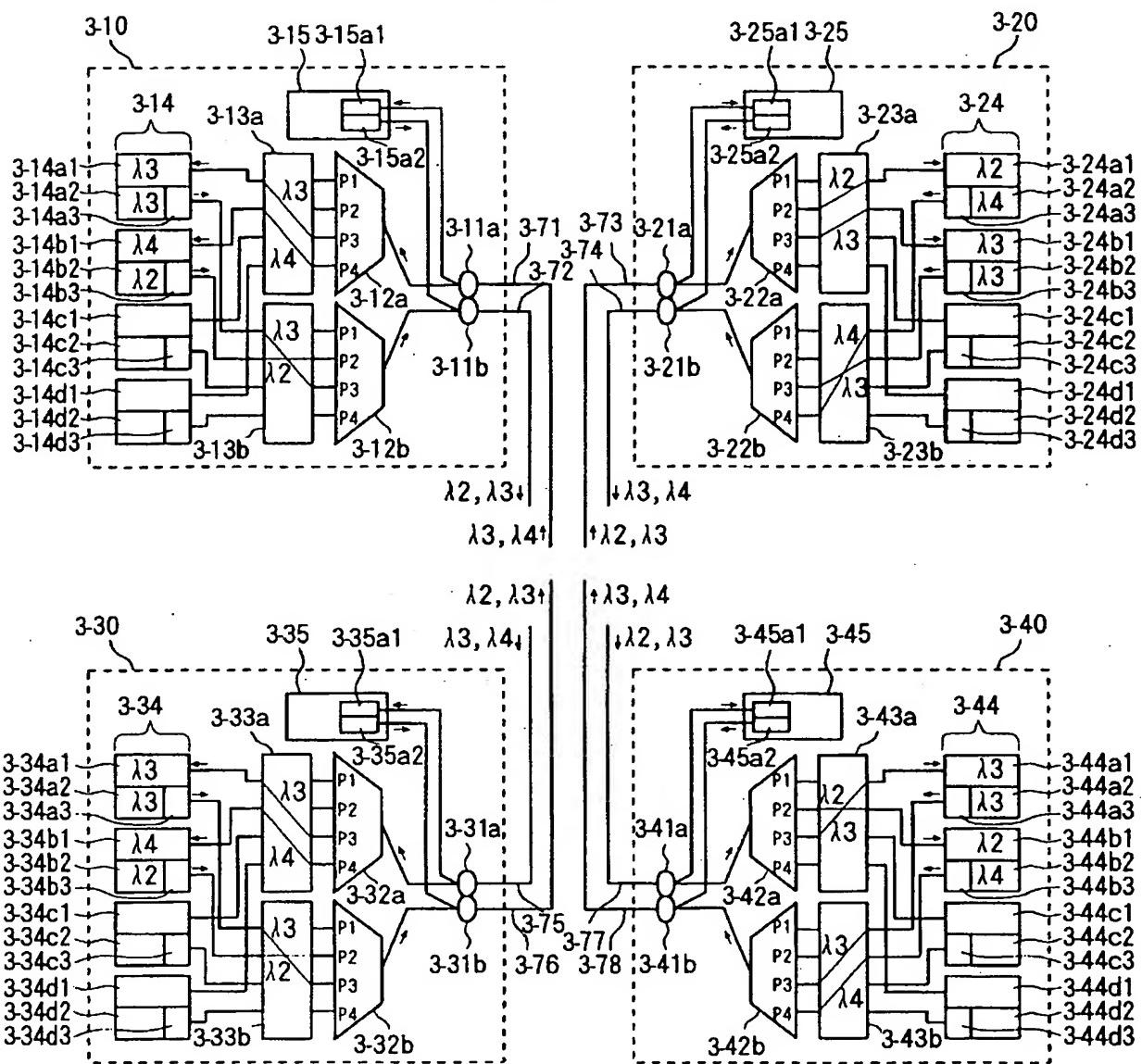


FIG. 3-5A

OPTICAL INPUT PORT

OPTICAL OUTPUT PORT

	1 (3-51e)	2 (3-51f)	3 (3-51g)	4 (3-51h)
1 (3-51a)	λ 1	λ 2	λ 3	λ 4
2 (3-51b)	λ 4	λ 1	λ 2	λ 3
3 (3-51c)	λ 3	λ 4	λ 1	λ 2
4 (3-51d)	λ 2	λ 3	λ 4	λ 1

FIG. 3-5B

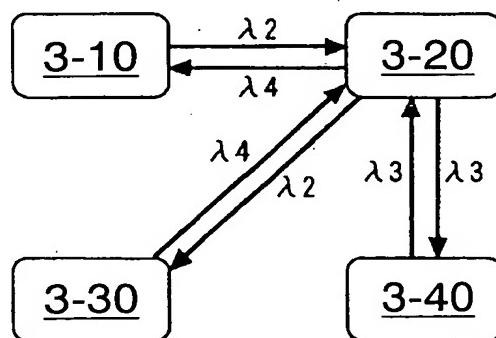


FIG. 3-6

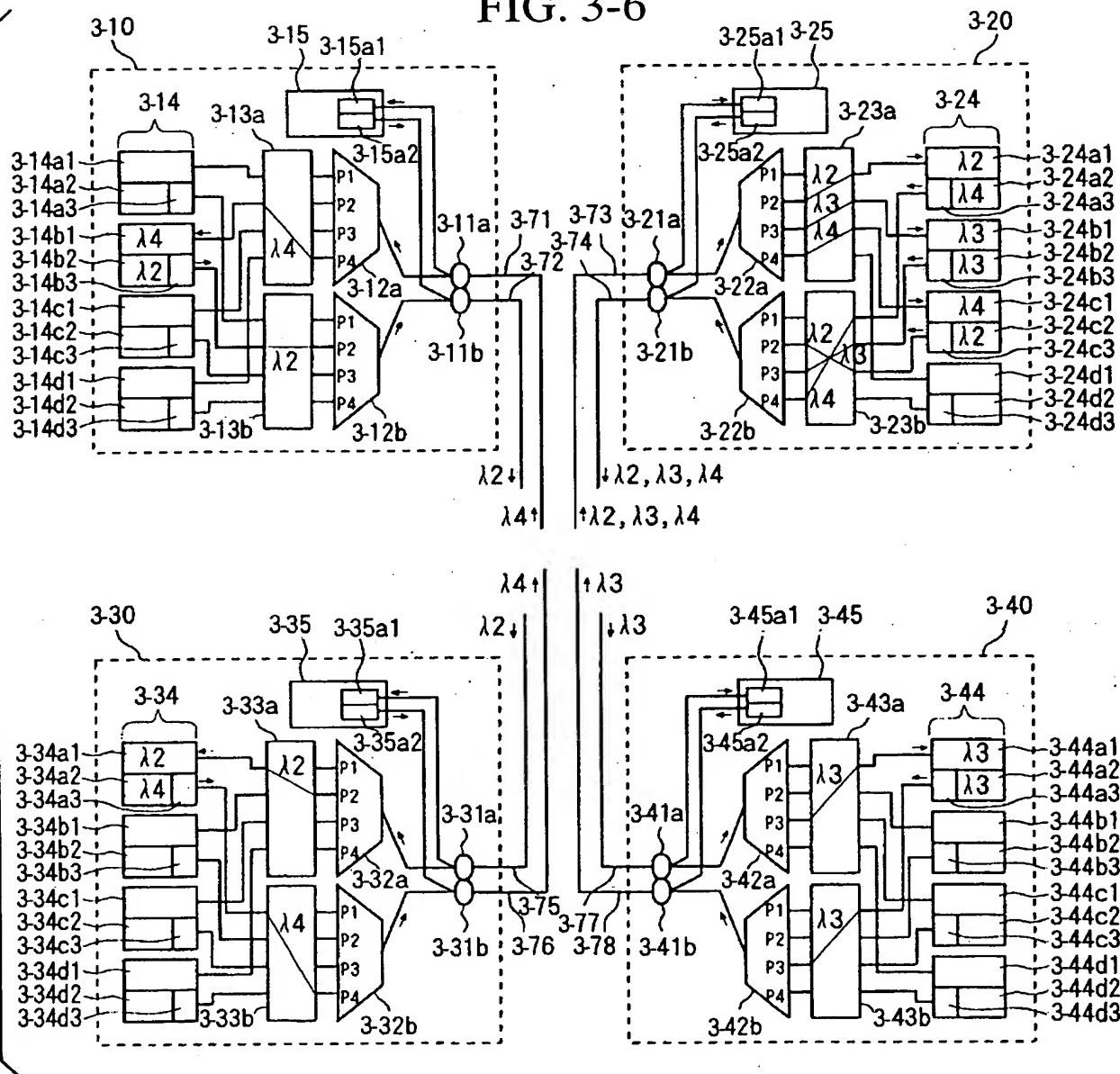


FIG. 3-7A

OPTICAL INPUT PORT

OPTICAL OUTPUT PORT

	1 (3-51e)	2 (3-51f)	3 (3-51g)	4 (3-51h)
1 (3-51a)	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$
2 (3-51b)	$\lambda 4$	$\lambda 1$	$\lambda 2$	$\lambda 3$
3 (3-51c)	$\lambda 3$	$\lambda 4$	$\lambda 1$	$\lambda 2$
4 (3-51d)	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 1$

FIG. 3-7B

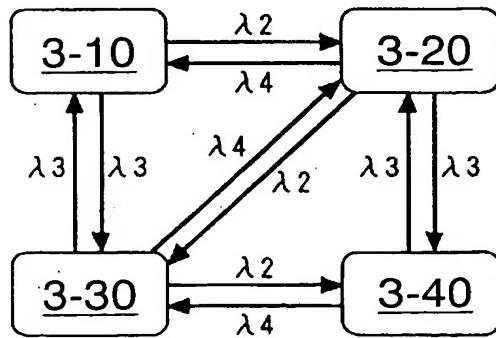
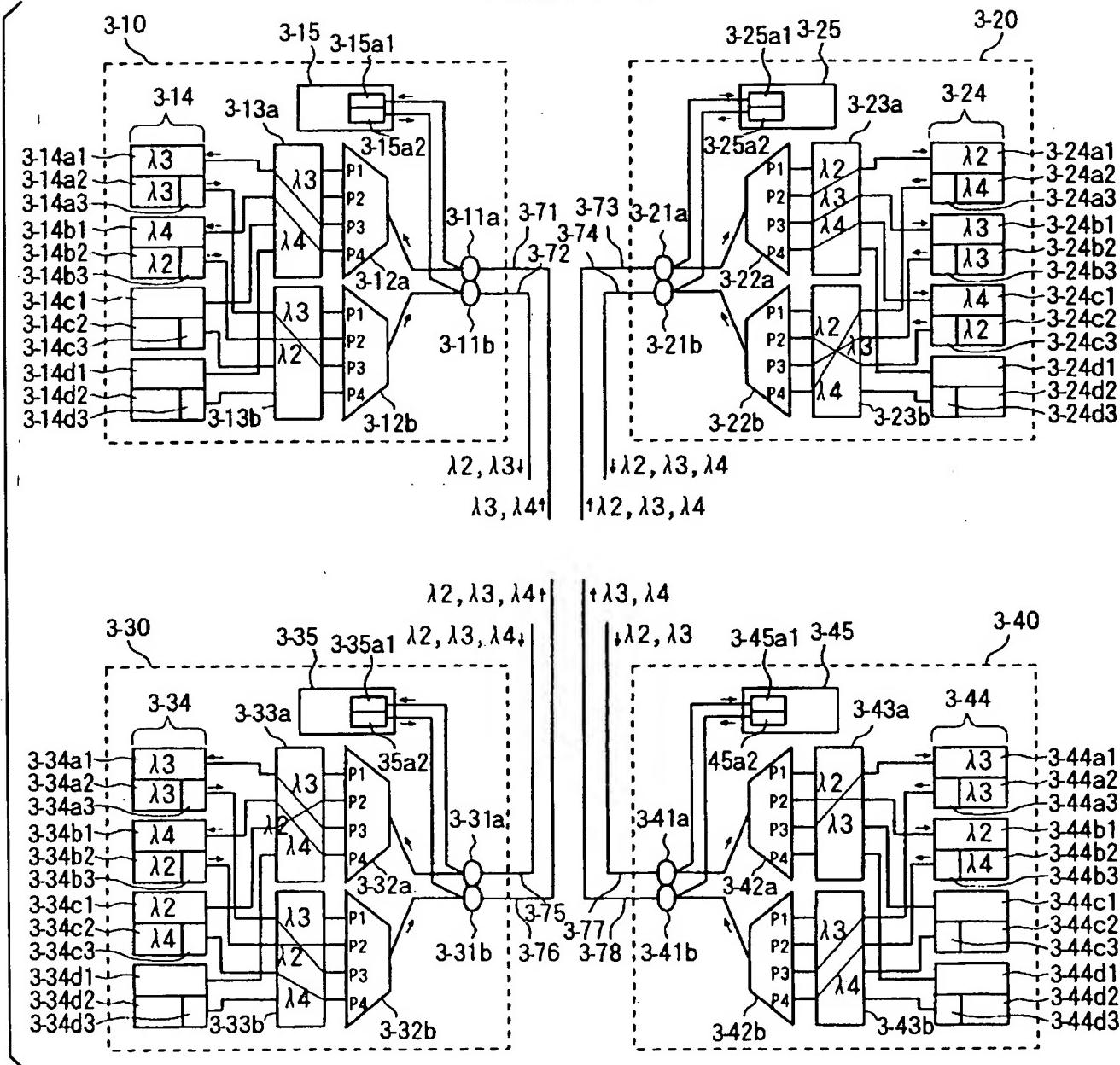


FIG. 3-8



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FIG. 3-9

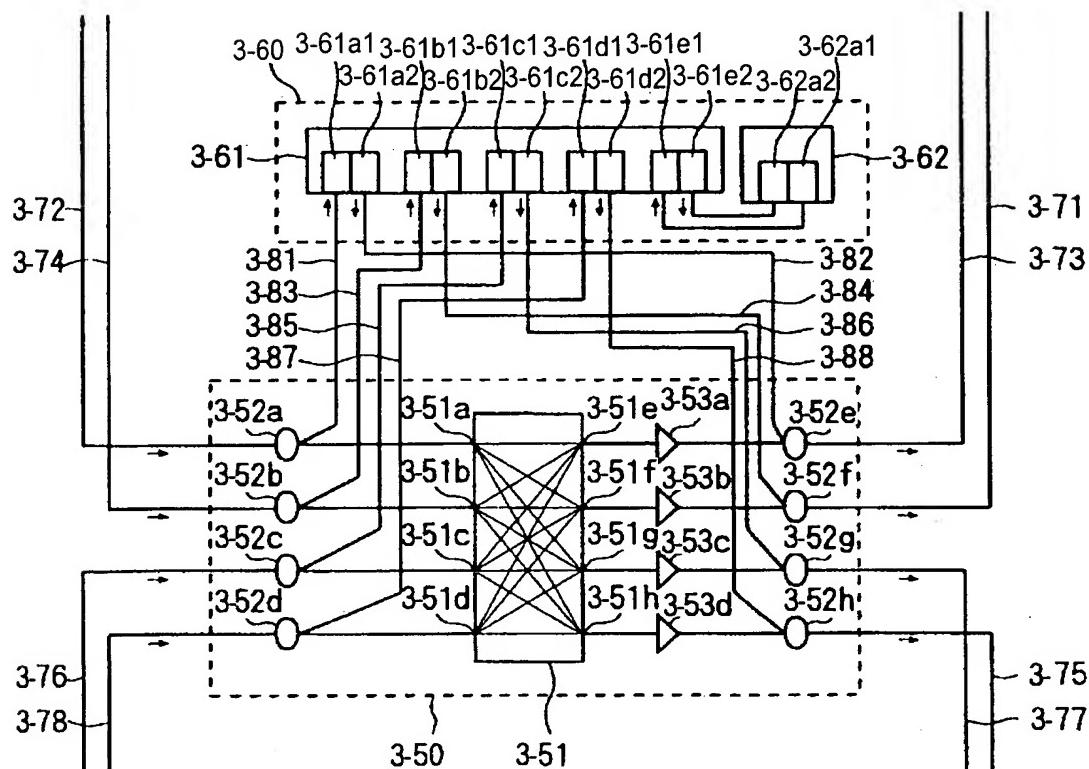


FIG. 3-10

	OPTICAL INPUT PORT			
	OPTICAL OUTPUT PORT			
•	1 (3-51e)	2 (3-51f)	3 (3-51g)	4 (3-51h)
1 (3-51a)	$\lambda 1$	$\lambda 2$	$\lambda 3$	$\lambda 4$
2 (3-51b)	$\lambda 2$	$\lambda 3$	$\lambda 4$	$\lambda 5$
3 (3-51c)	$\lambda 3$	$\lambda 4$	$\lambda 5$	$\lambda 6$
4 (3-51d)	$\lambda 4$	$\lambda 5$	$\lambda 6$	$\lambda 7$

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FIG. 3-11

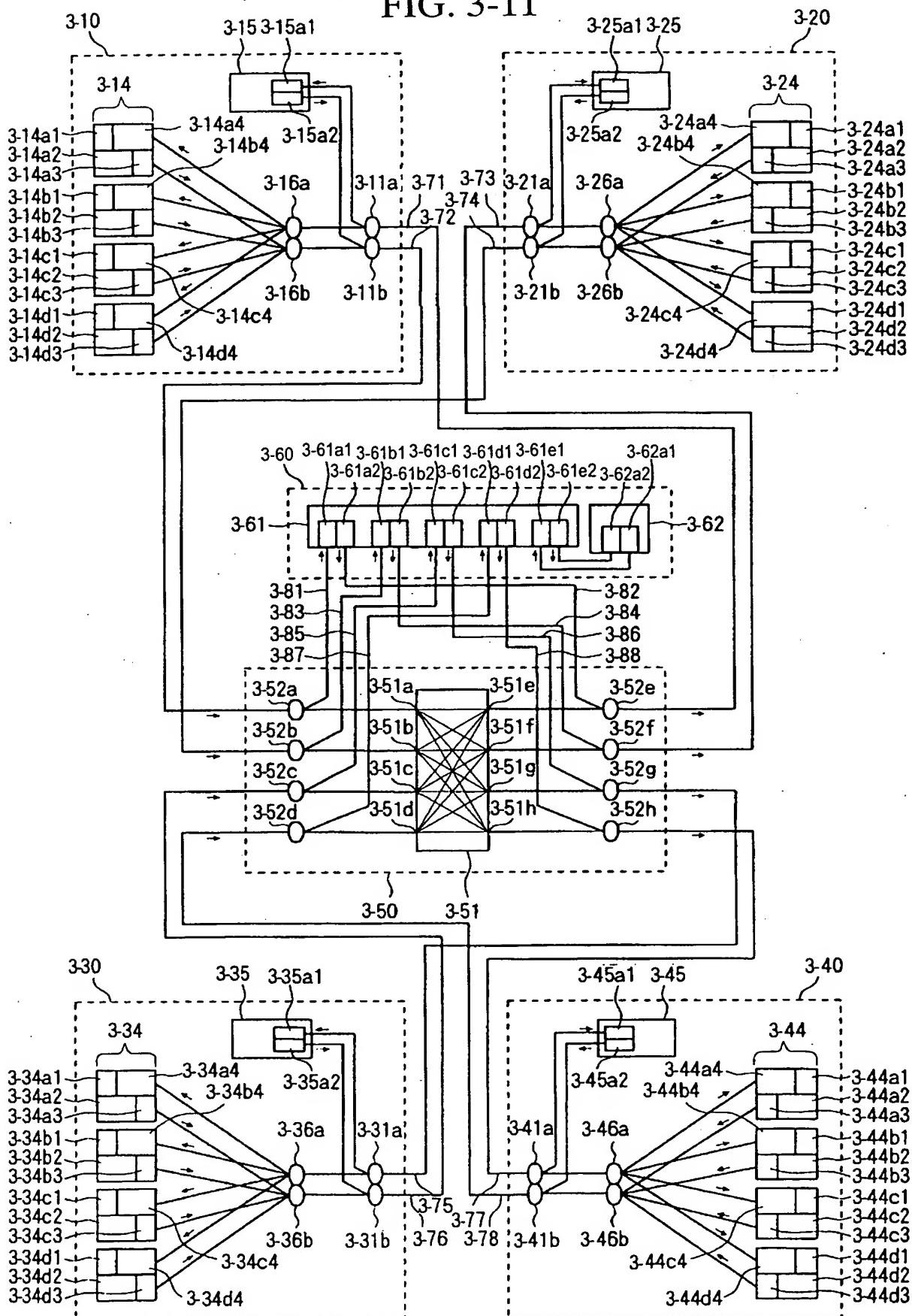
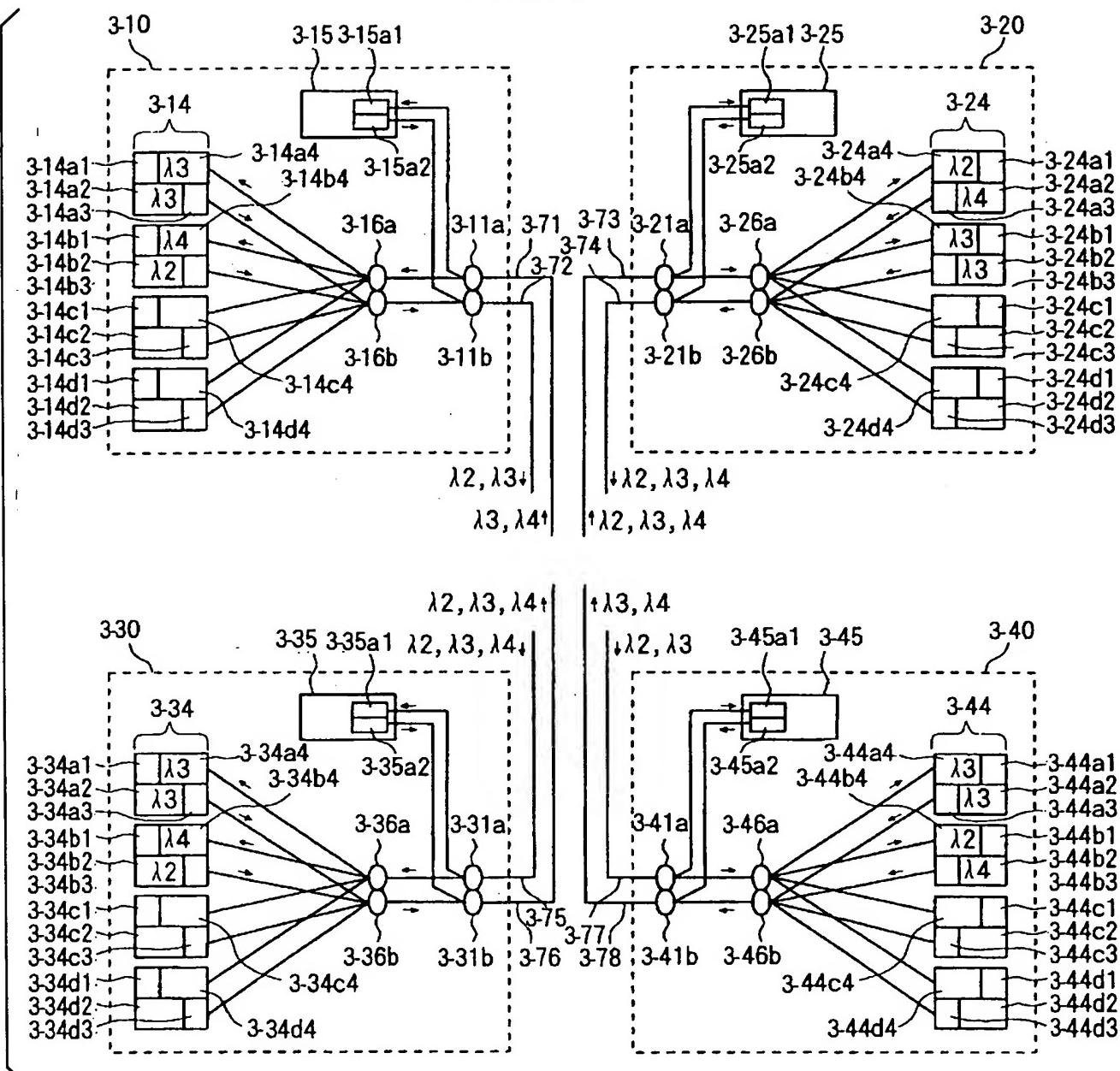


FIG. 3-12



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FIG. 3-13

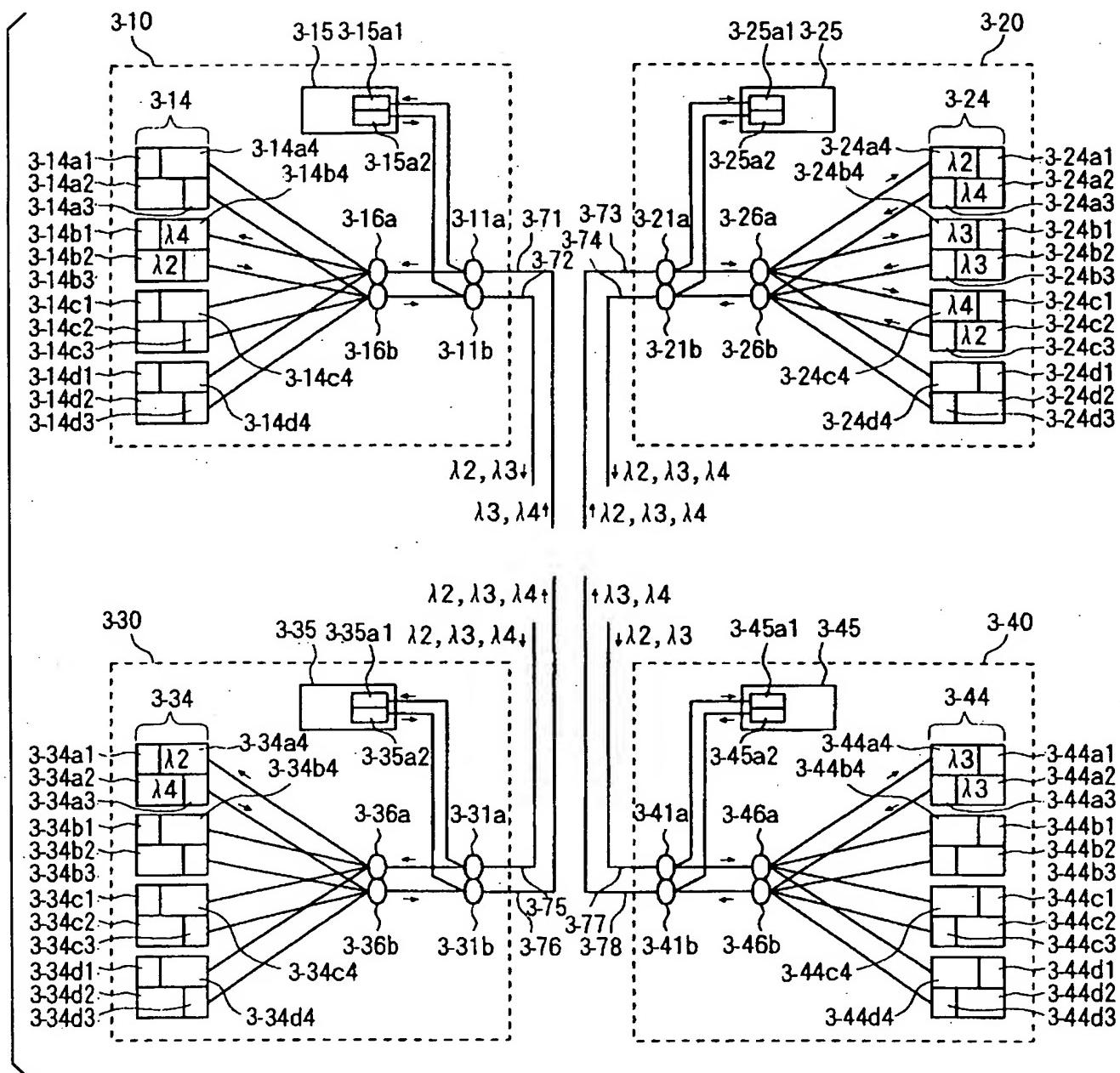
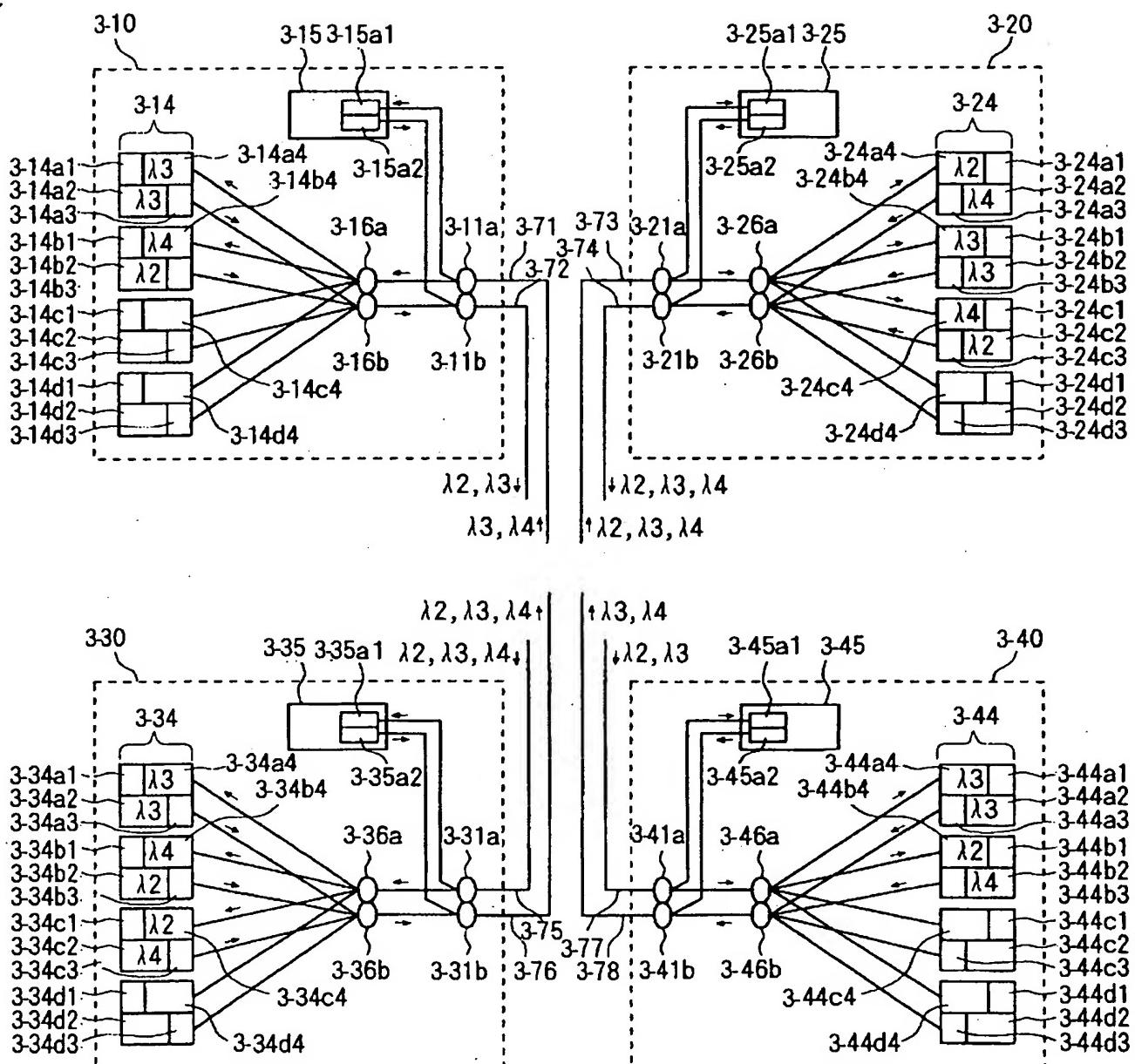
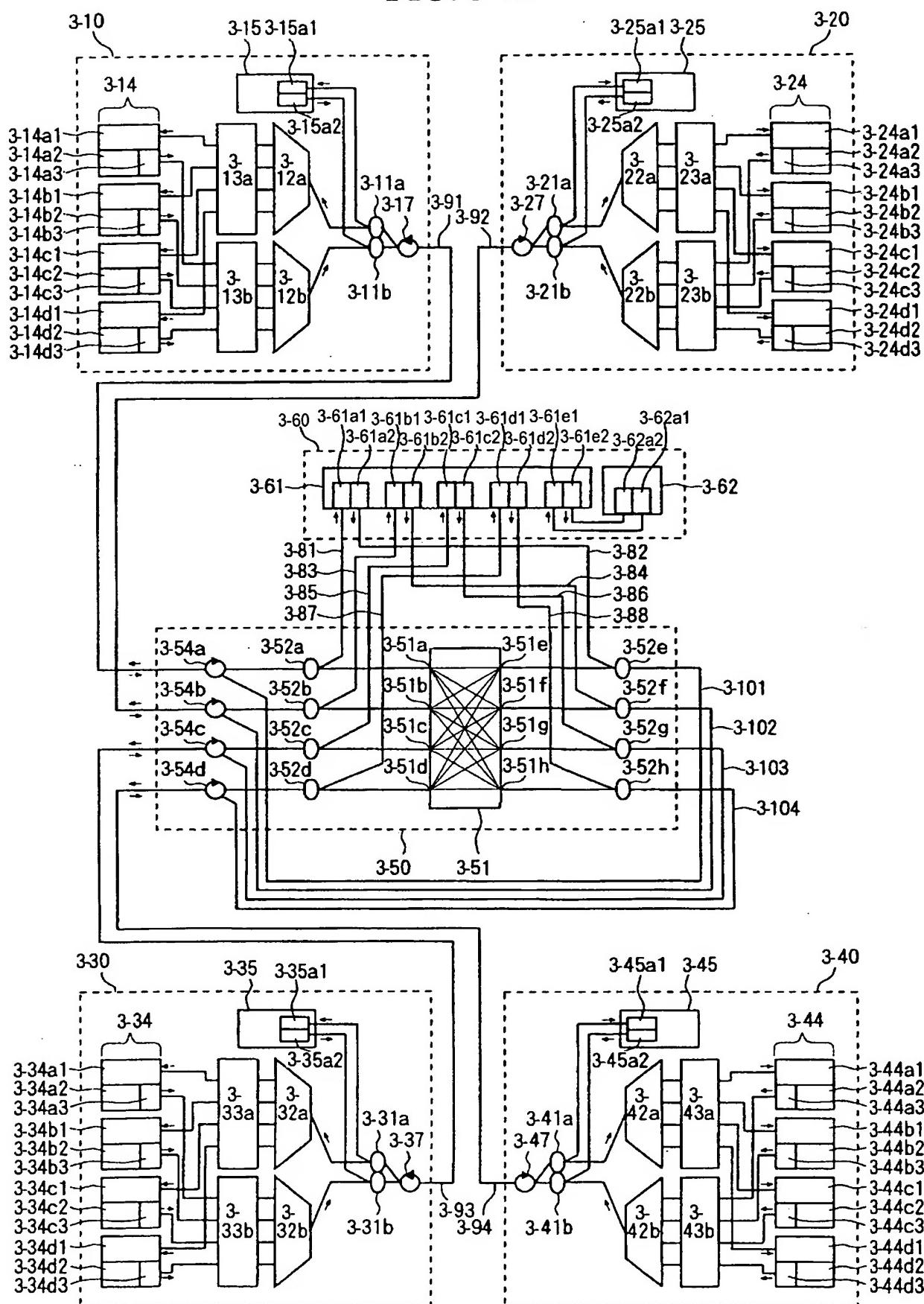


FIG. 3-14

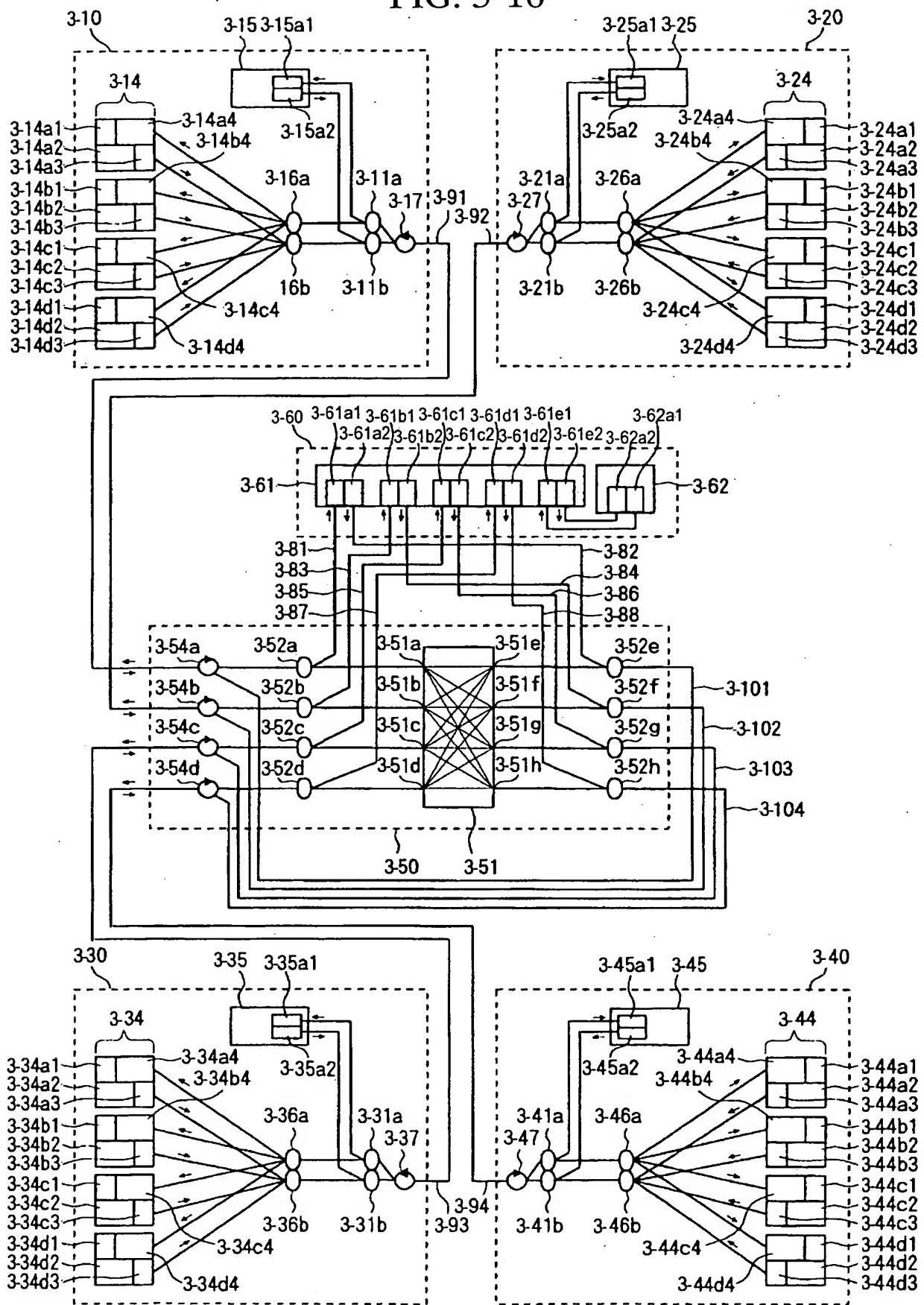


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 FIG. 3-15



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FIG. 3-16



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FIG. 3-17

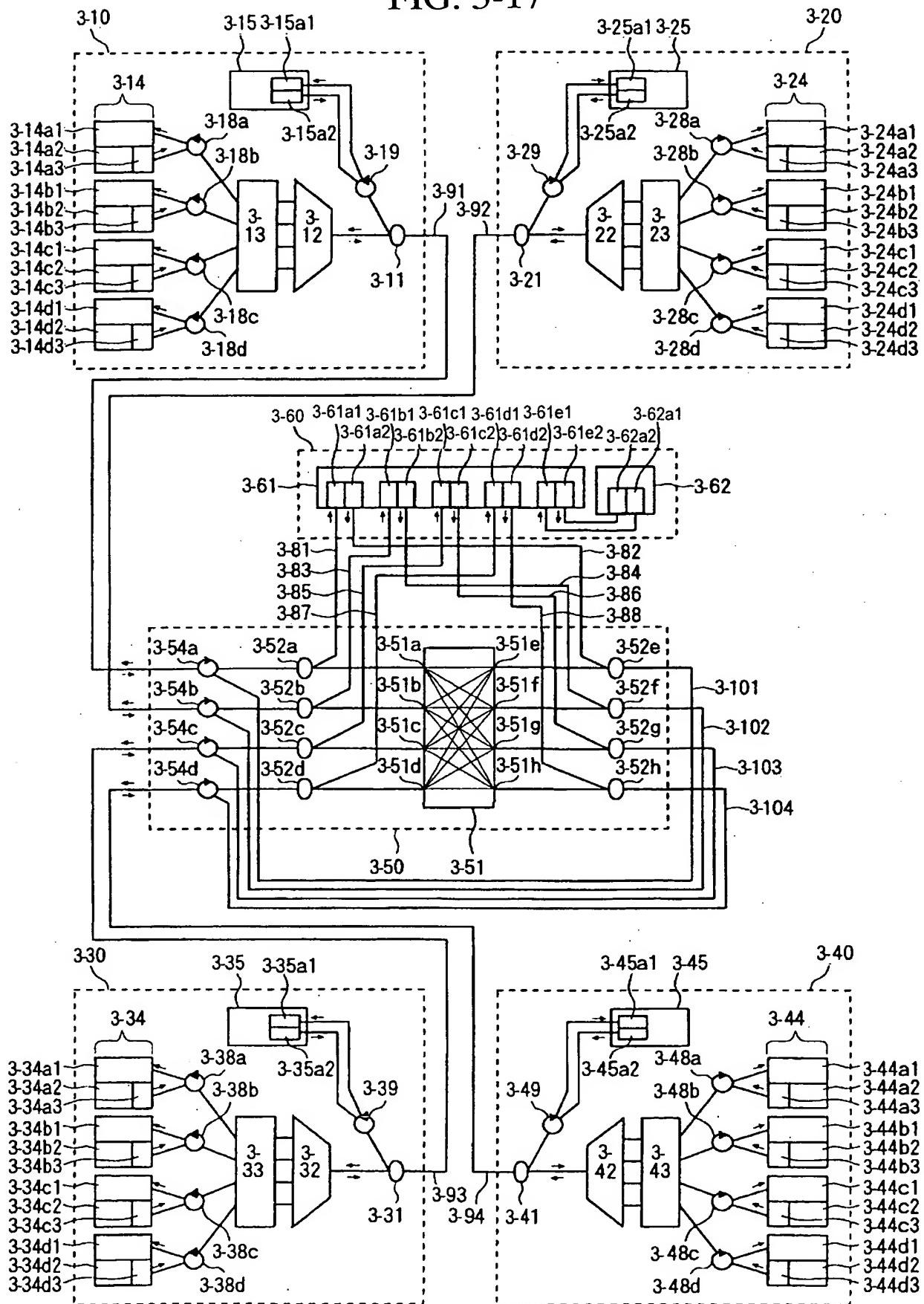
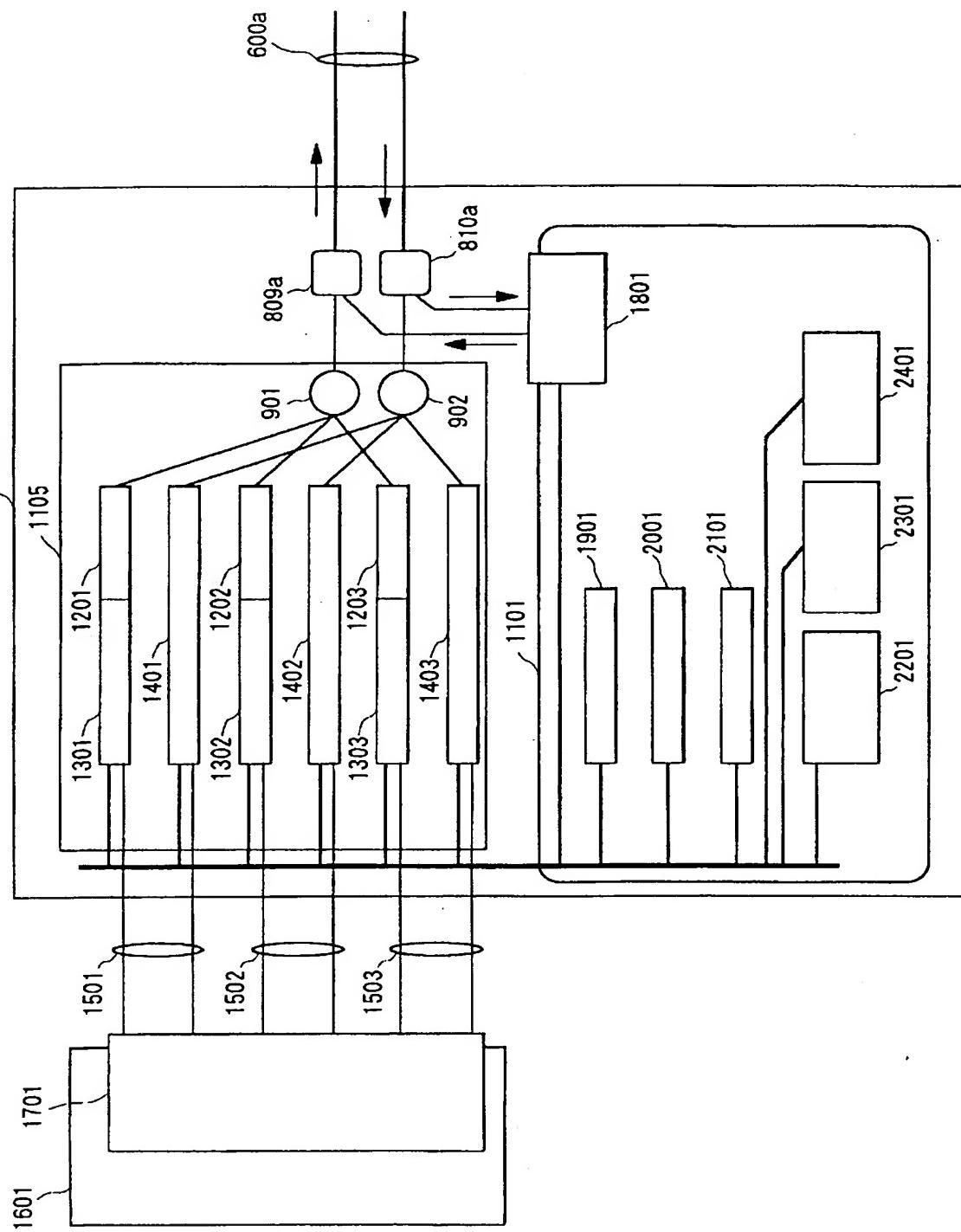


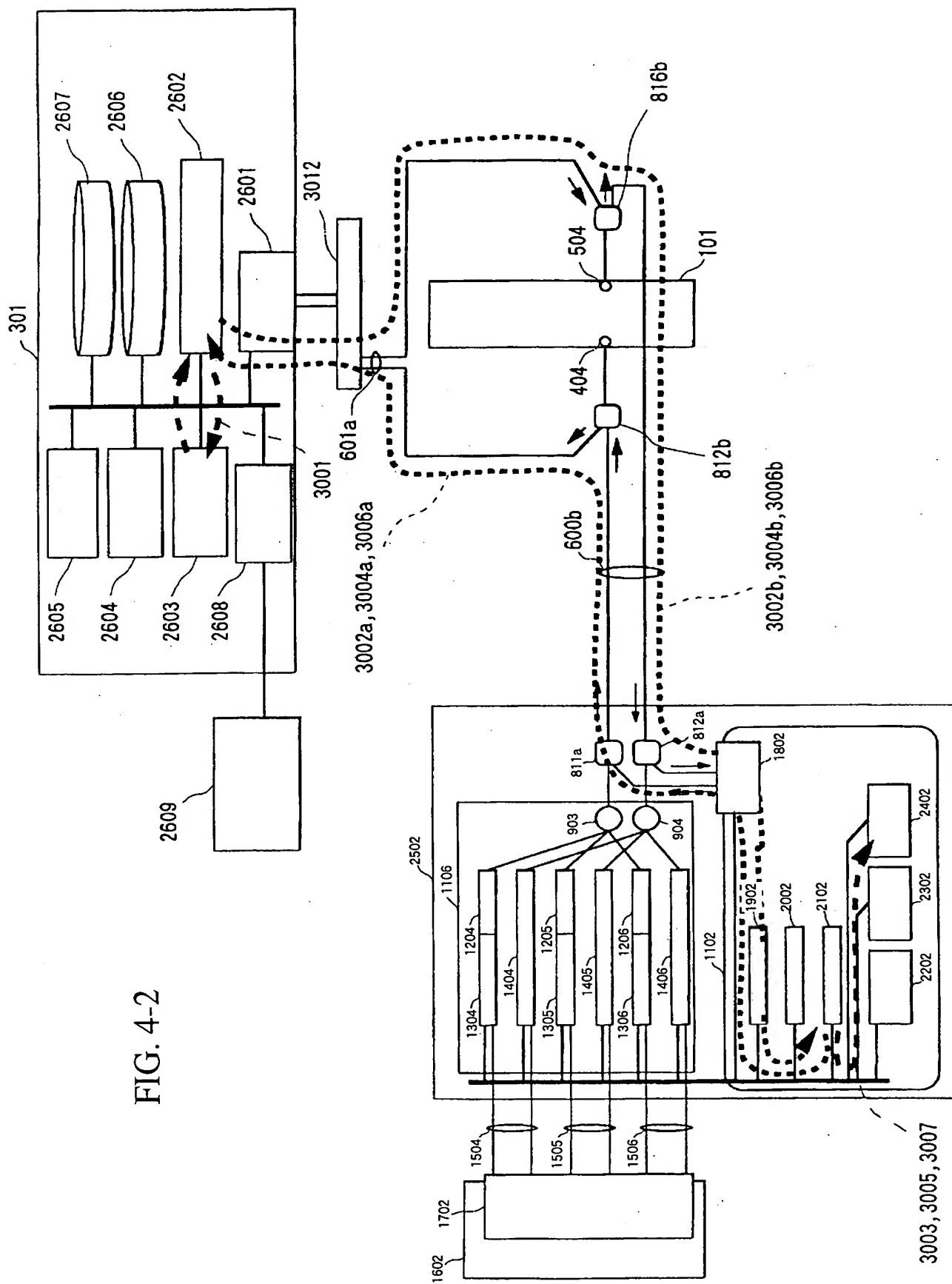
FIG. 4-1



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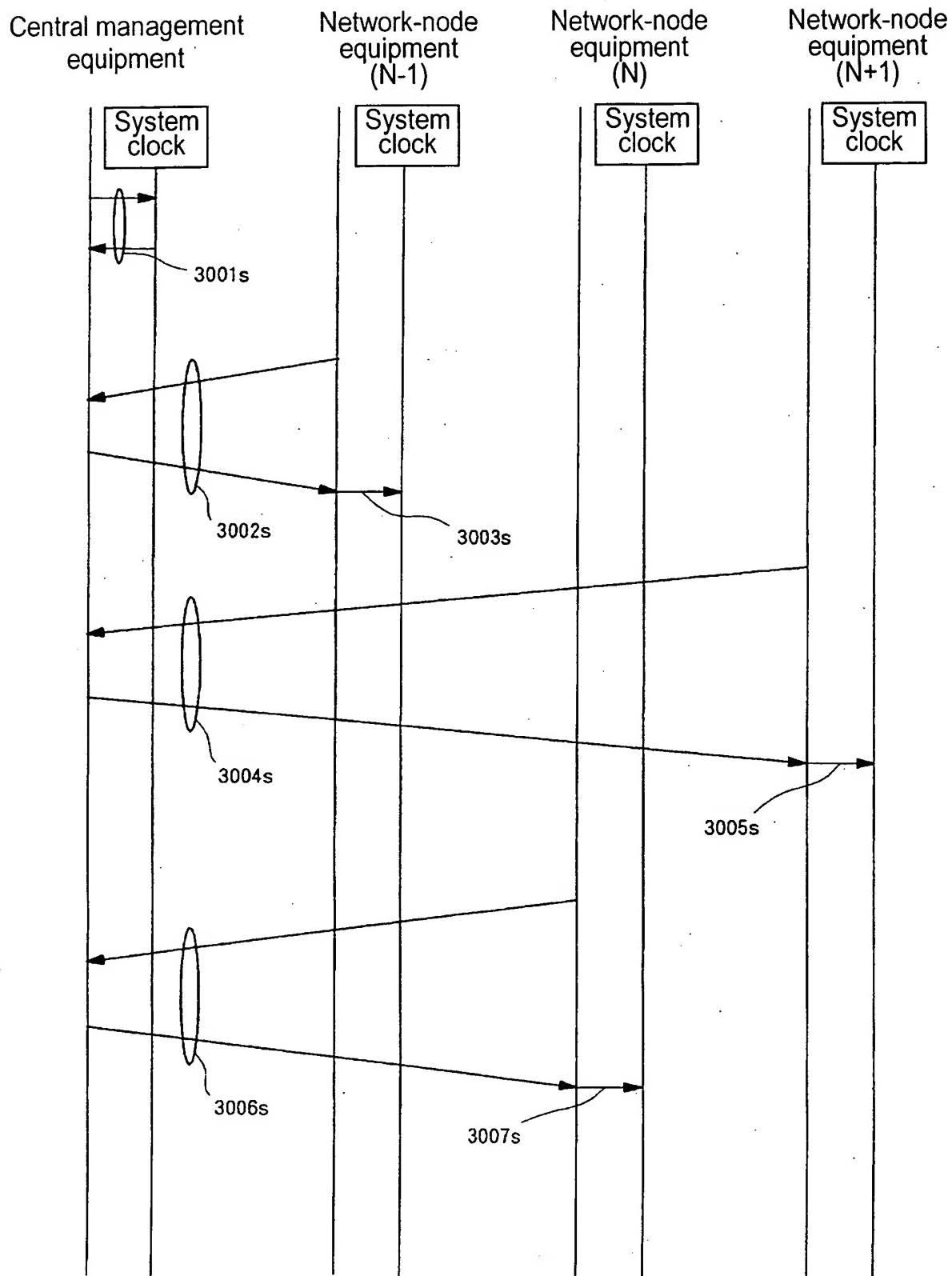
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FIG. 4-2



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FIG. 4-3



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FIG. 4-4

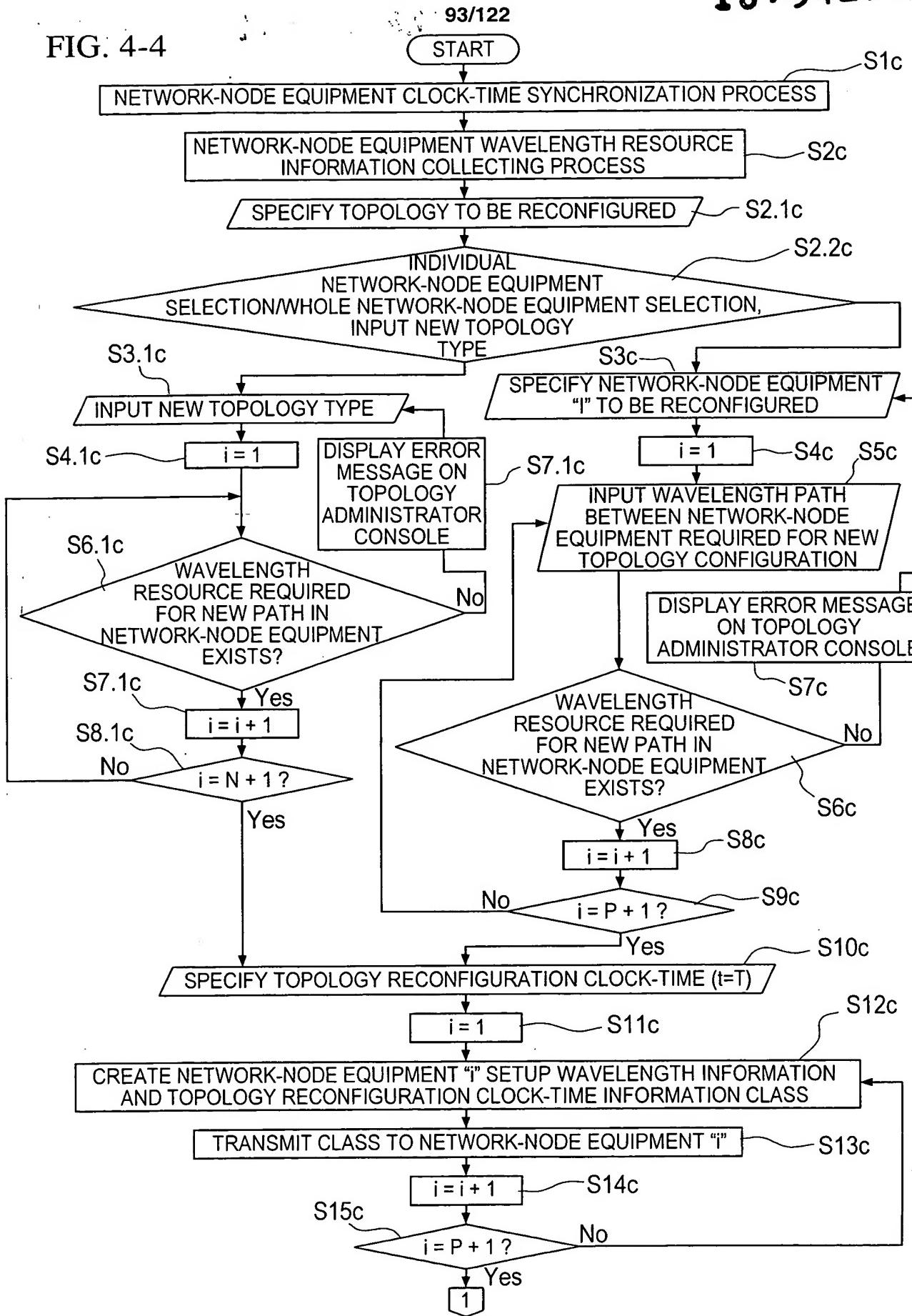


FIG. 4-5

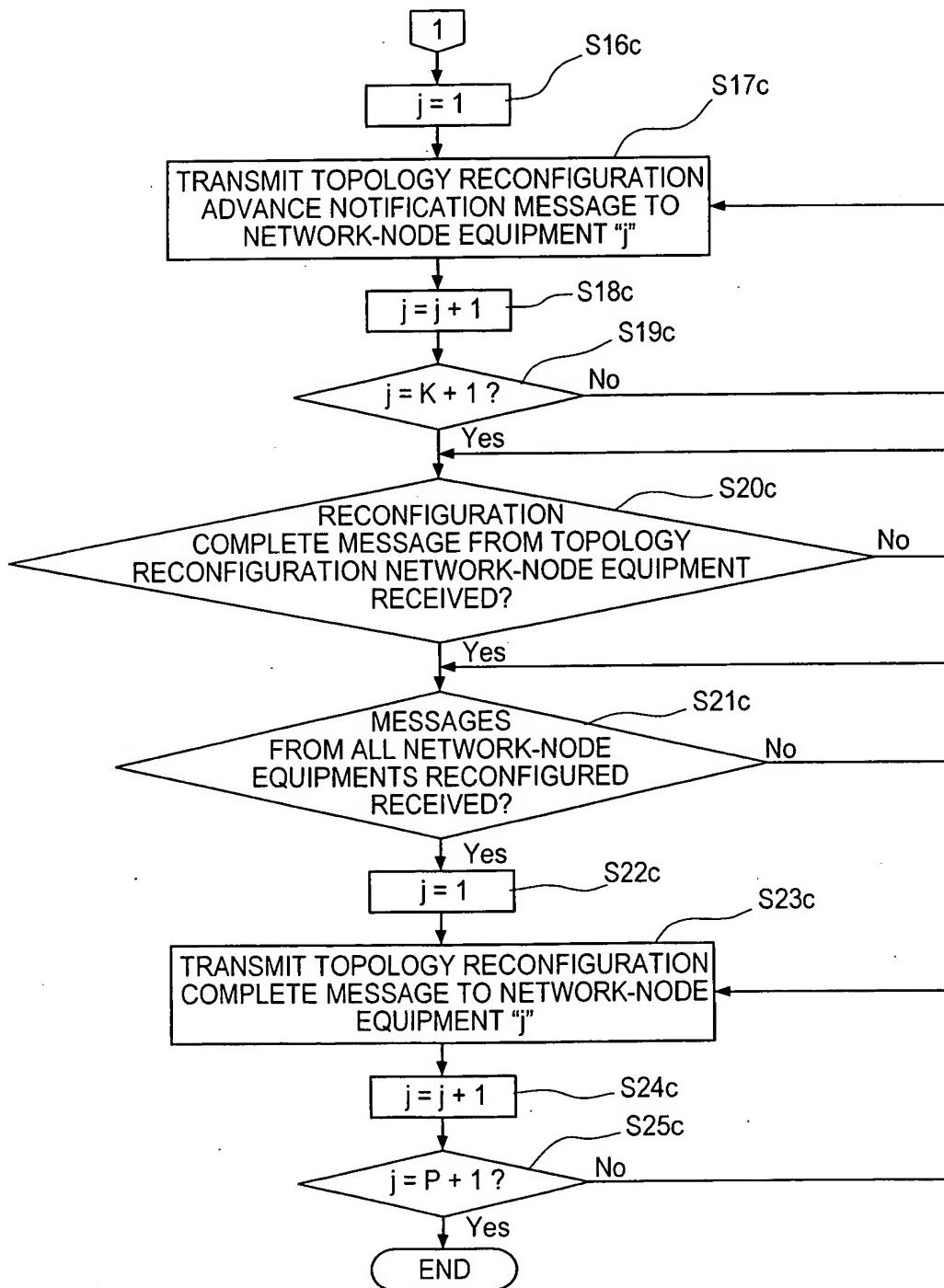
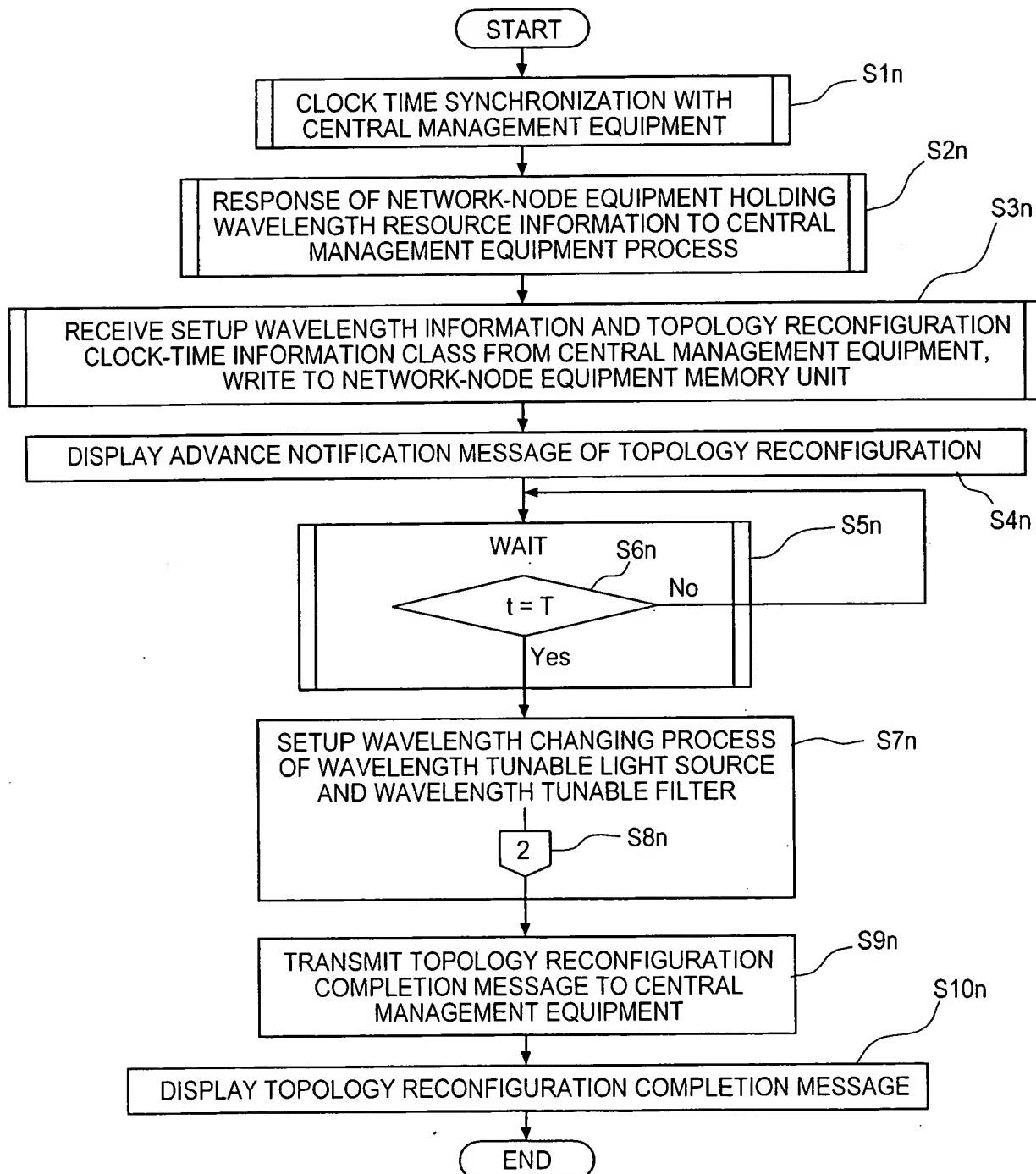


FIG. 4-6



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FIG. 4-7

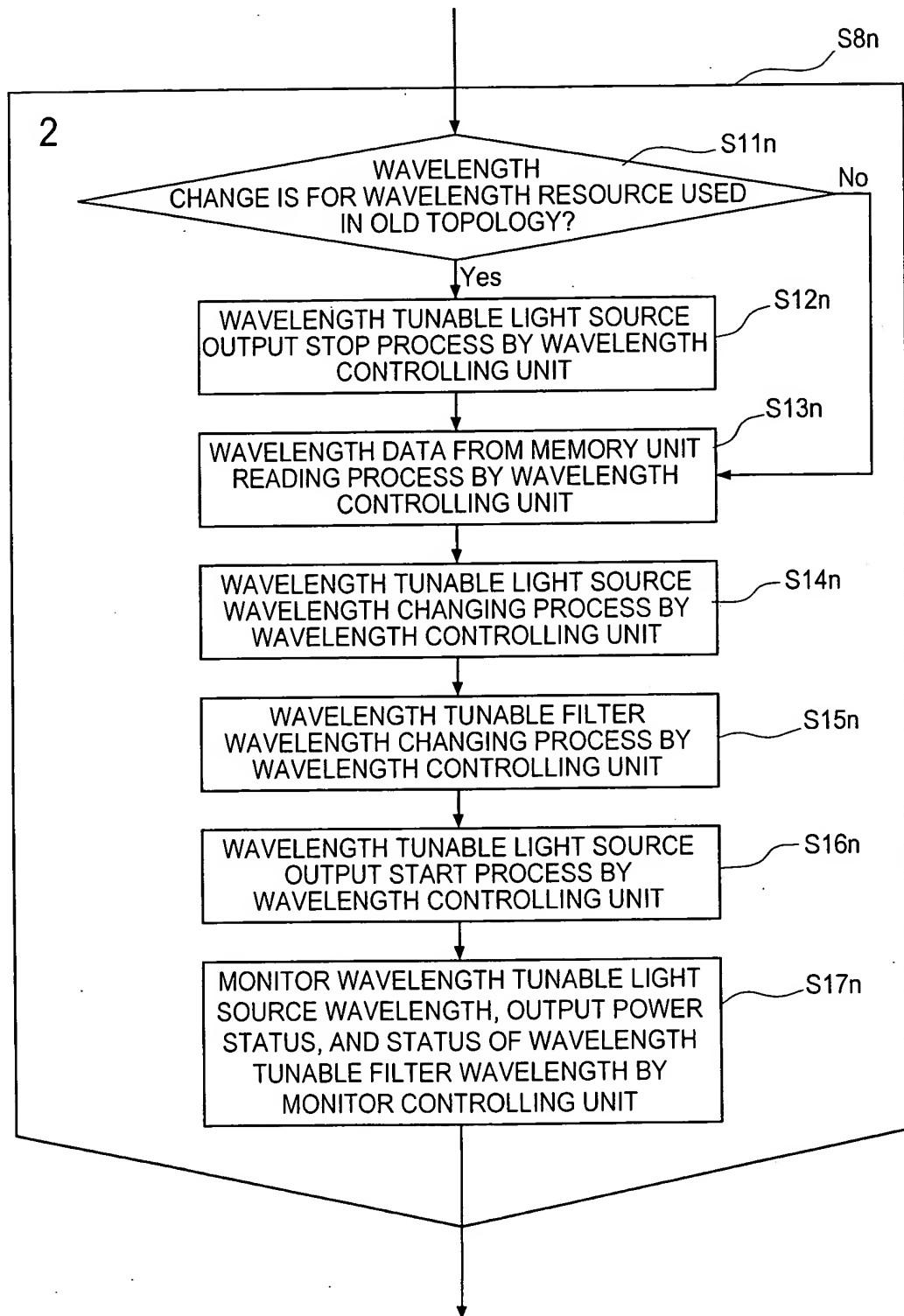
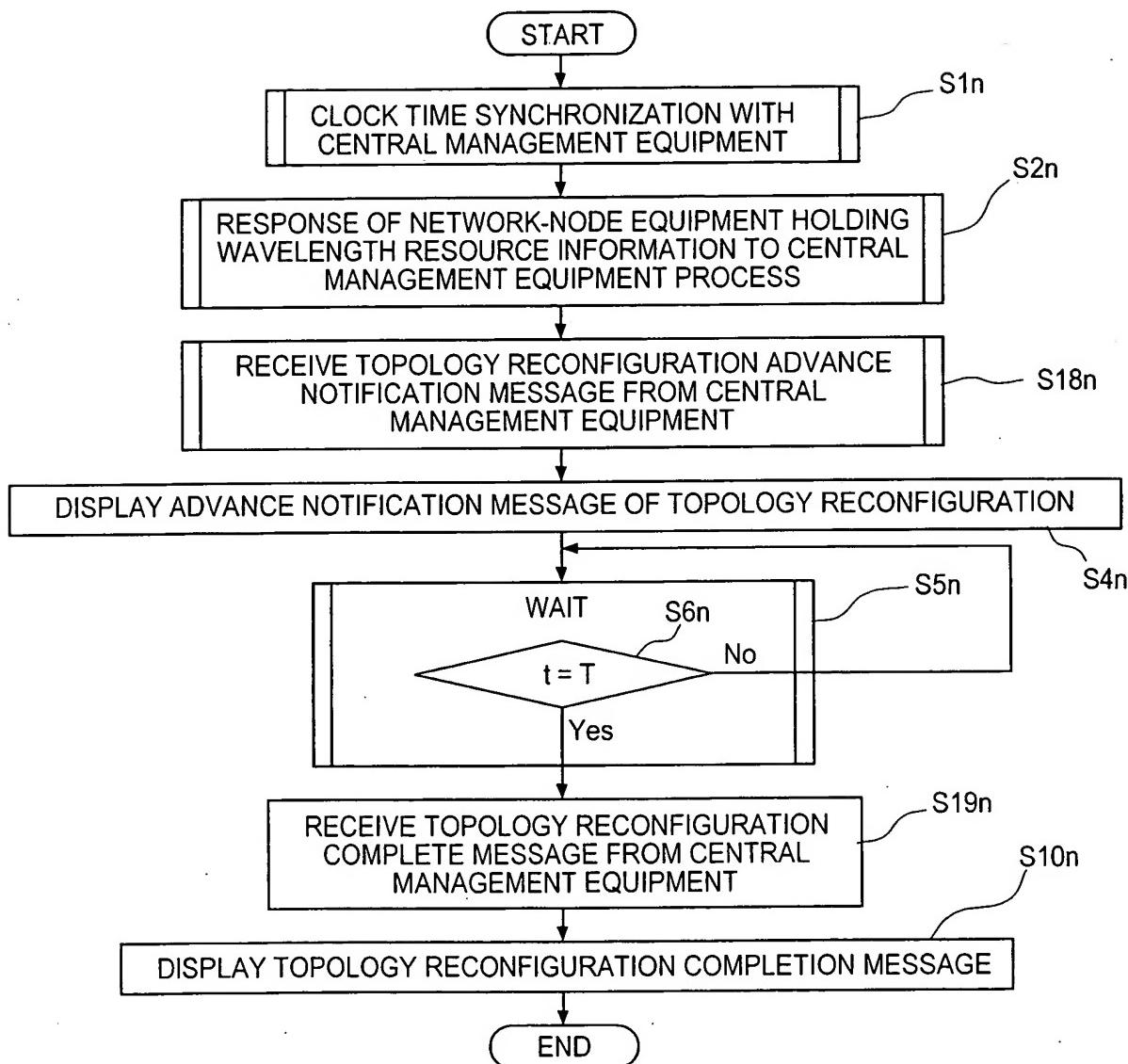
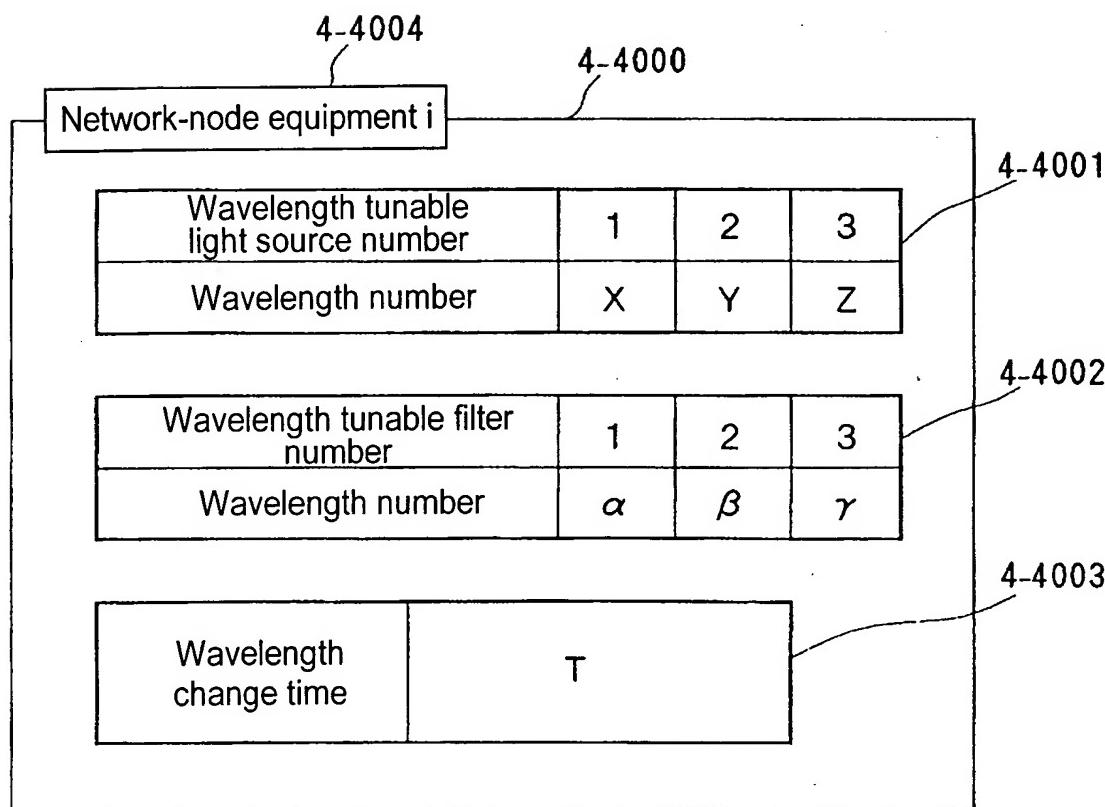


FIG. 4-8



SEARCHED

FIG. 4-9



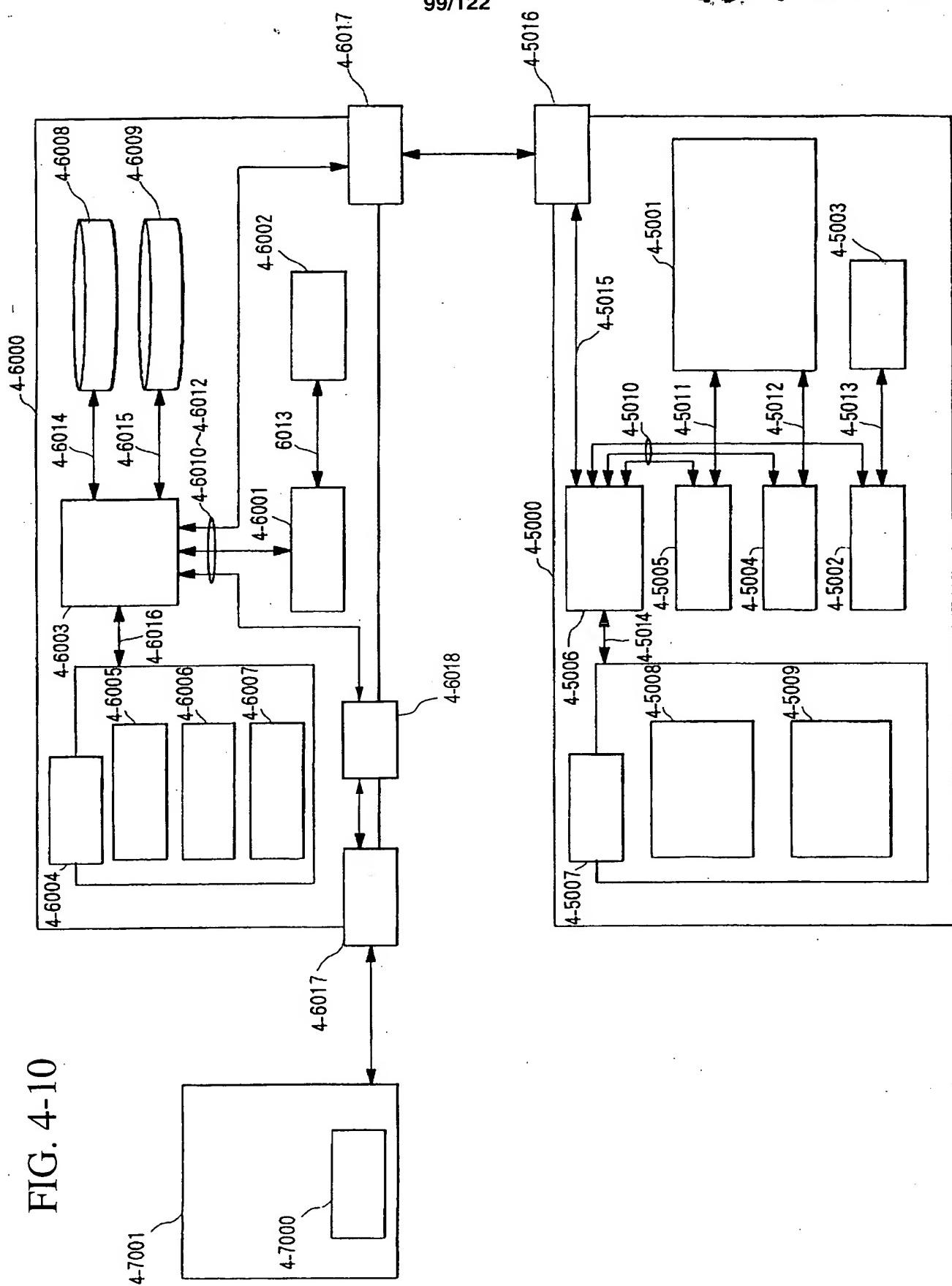


FIG. 4-10

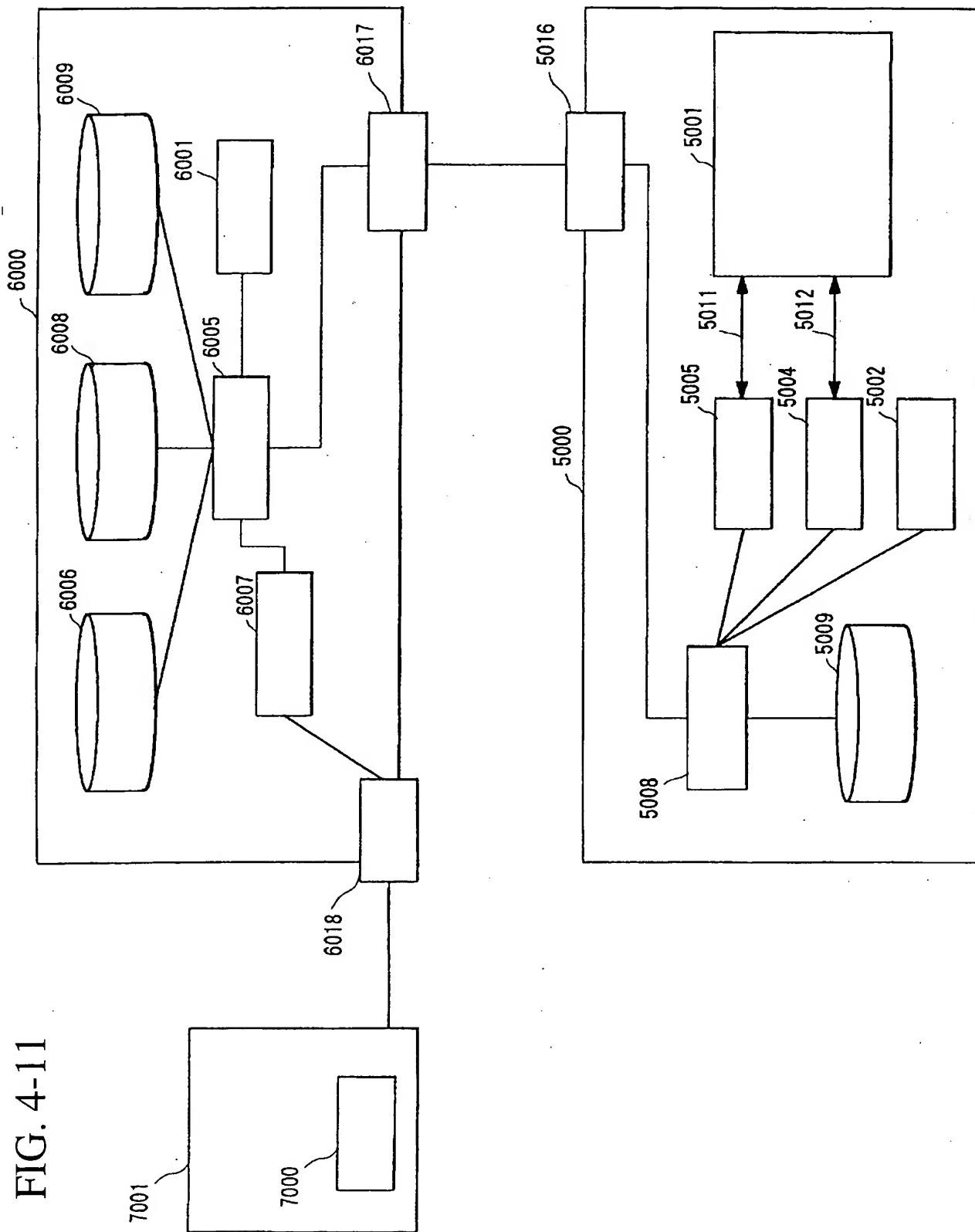


FIG. 4-11

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FIG. 4-12

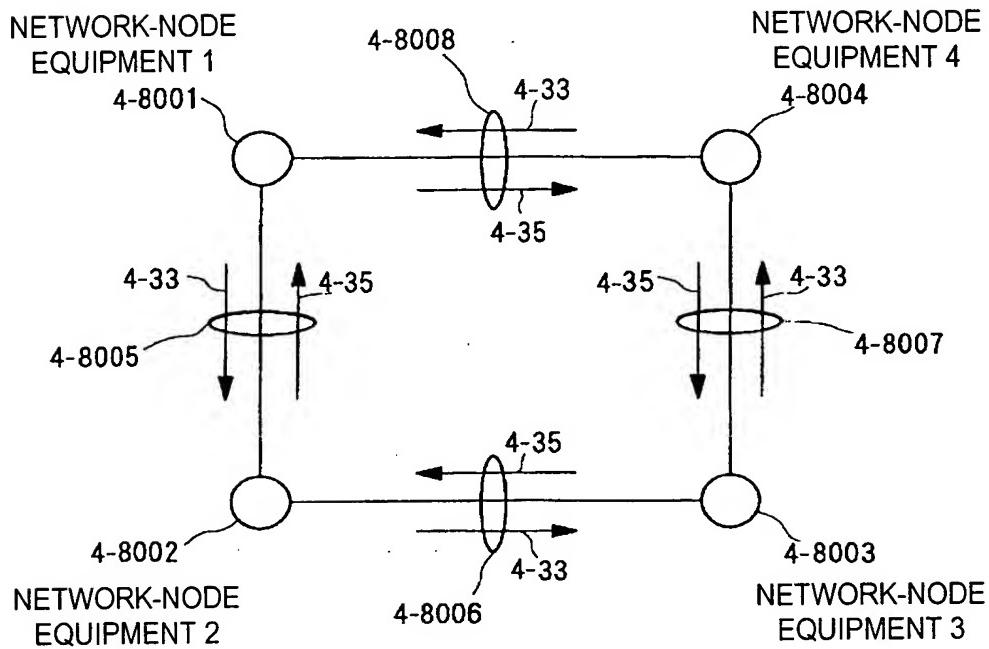


FIG. 4-13

A 4x4 matrix diagram representing connection values between four nodes. The columns and rows are indexed from 1 to 4. The matrix entries are as follows:

	1	2	3	4
1	3 2	3 3 (4-9001)	3 4	3 5 (4-9002)
2	3 5 (4-9003)	3 2	3 3 (4-9004)	3 4
3	3 4	3 5 (4-9005)	3 2	3 3 (4-9006)
4	3 3 (4-9007)	3 4	3 5 (4-9008)	3 2

The matrix is annotated with a pointer labeled 4-9000 pointing to the entry in the second row and fourth column (3 5, 4-9002).

FIG. 4-14

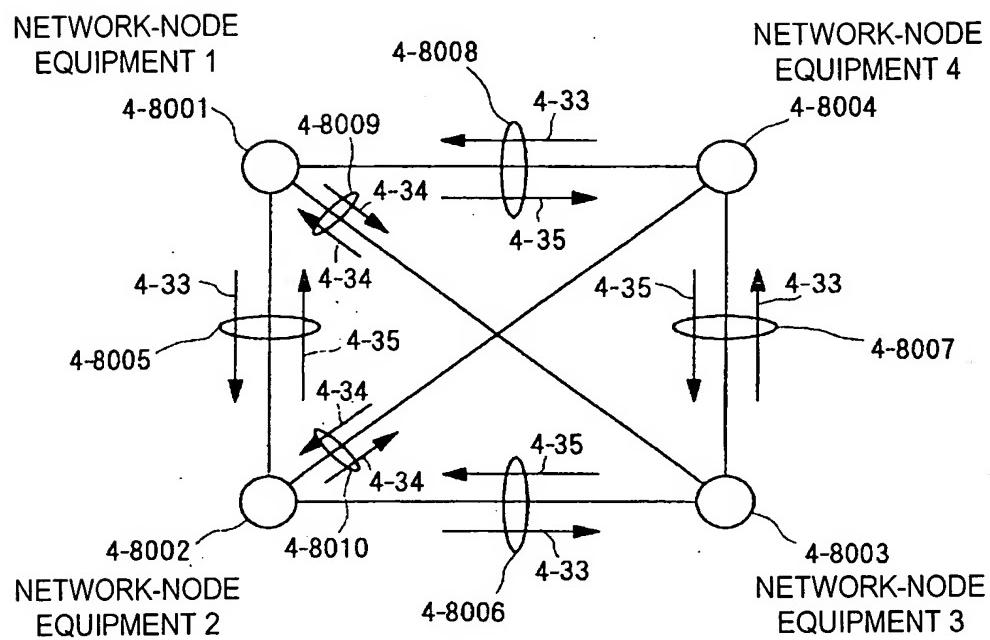


FIG. 4-15

A 4x4 matrix diagram representing a connection or mapping between four nodes (1, 2, 3, 4) on both axes. The matrix is labeled with values corresponding to the fiber numbers shown in FIG. 4-14.

	1	2	3	4
1	3 2	3 3 (4-9001)	3 4 (4-9009)	3 5 (4-9002)
2	3 5 (4-9003)	3 2	3 3 (4-9004)	3 4 (4-9010)
3	3 4 (4-9011)	3 5 (4-9005)	3 2	3 3 (4-9006)
4	3 3 (4-9007)	3 4 (4-9012)	3 5 (4-9008)	3 2

FIG. 4-16

4-10002a

4-10001a

Network-node equipment 1

Wavelength tunable light source number	1	2	3
Wavelength number	3 3	3 5	3 4
Wavelength tunable filter number	1	2	3
Wavelength number	3 5	3 3	3 4
Wavelength change time	2 1 : 0 0		

4-10003a

4-10004a

4-10005a

FIG. 4-17

4-10002b

4-10001b

Network-node equipment 2

Wavelength tunable light source number	1	2	3
Wavelength number	3 3	3 5	3 4
Wavelength tunable filter number	1	2	3
Wavelength number	3 5	3 3	3 4
Wavelength change time	2 1 : 0 0		

4-10003b

4-10004b

4-10005b

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FIG. 4-18

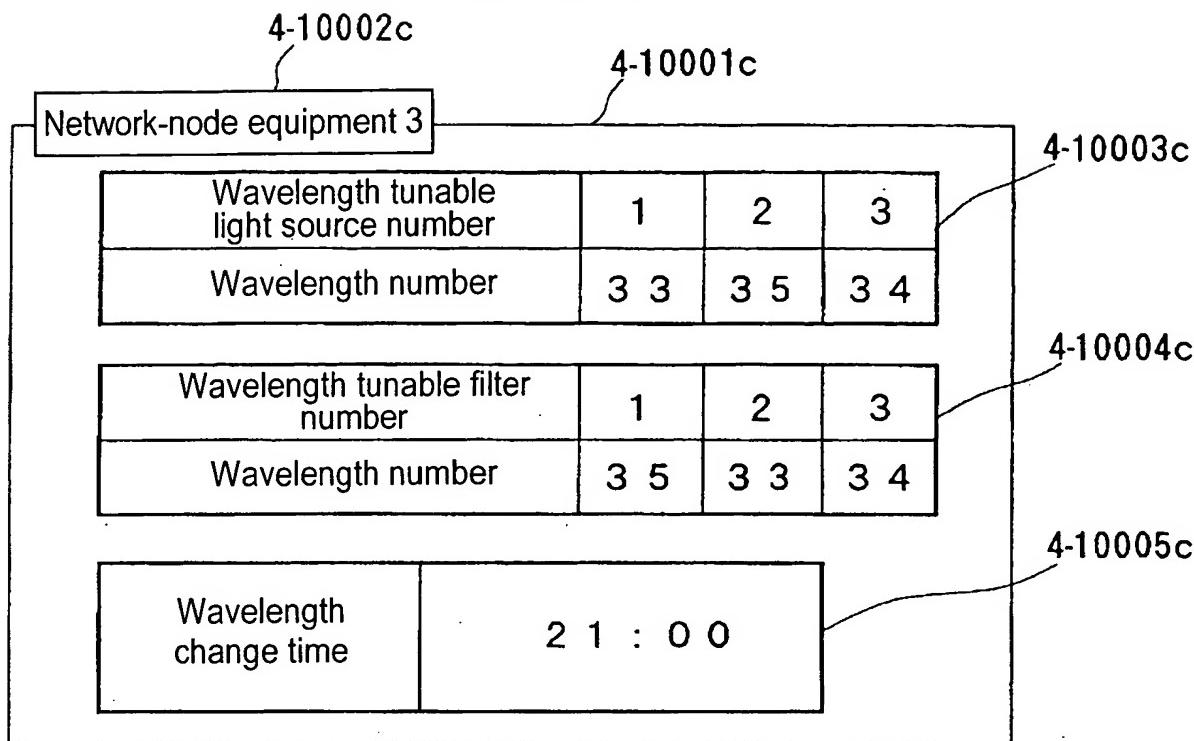
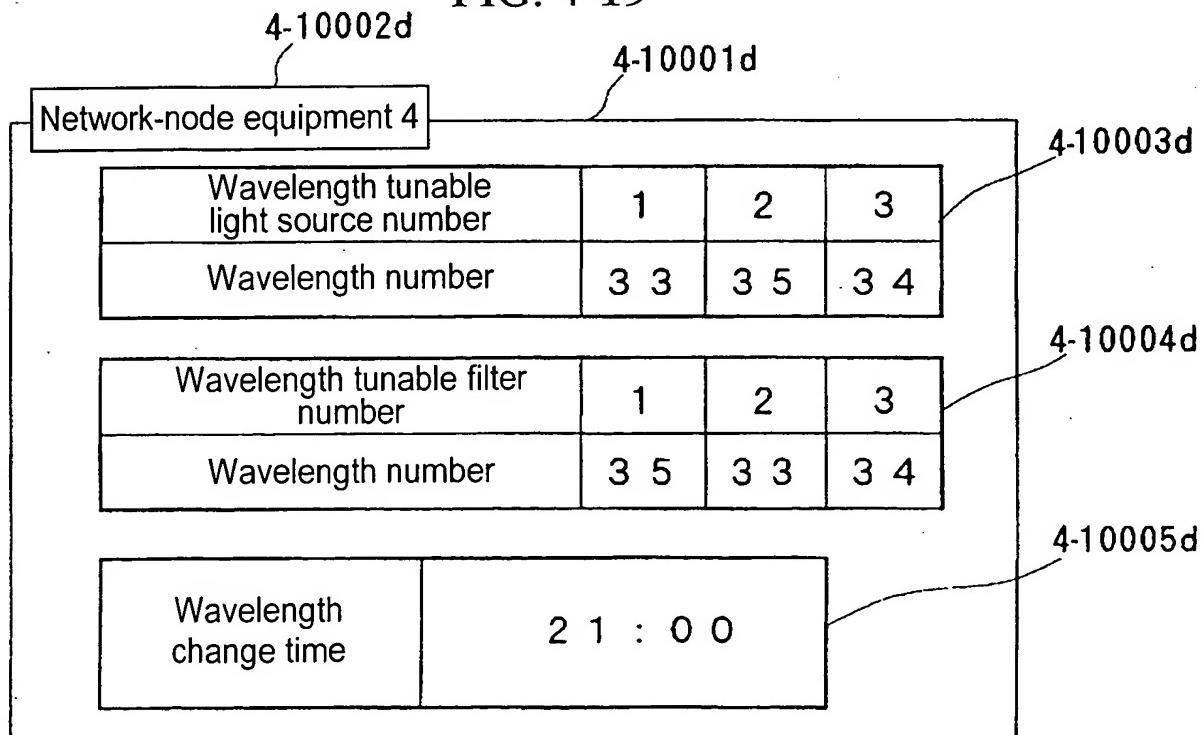


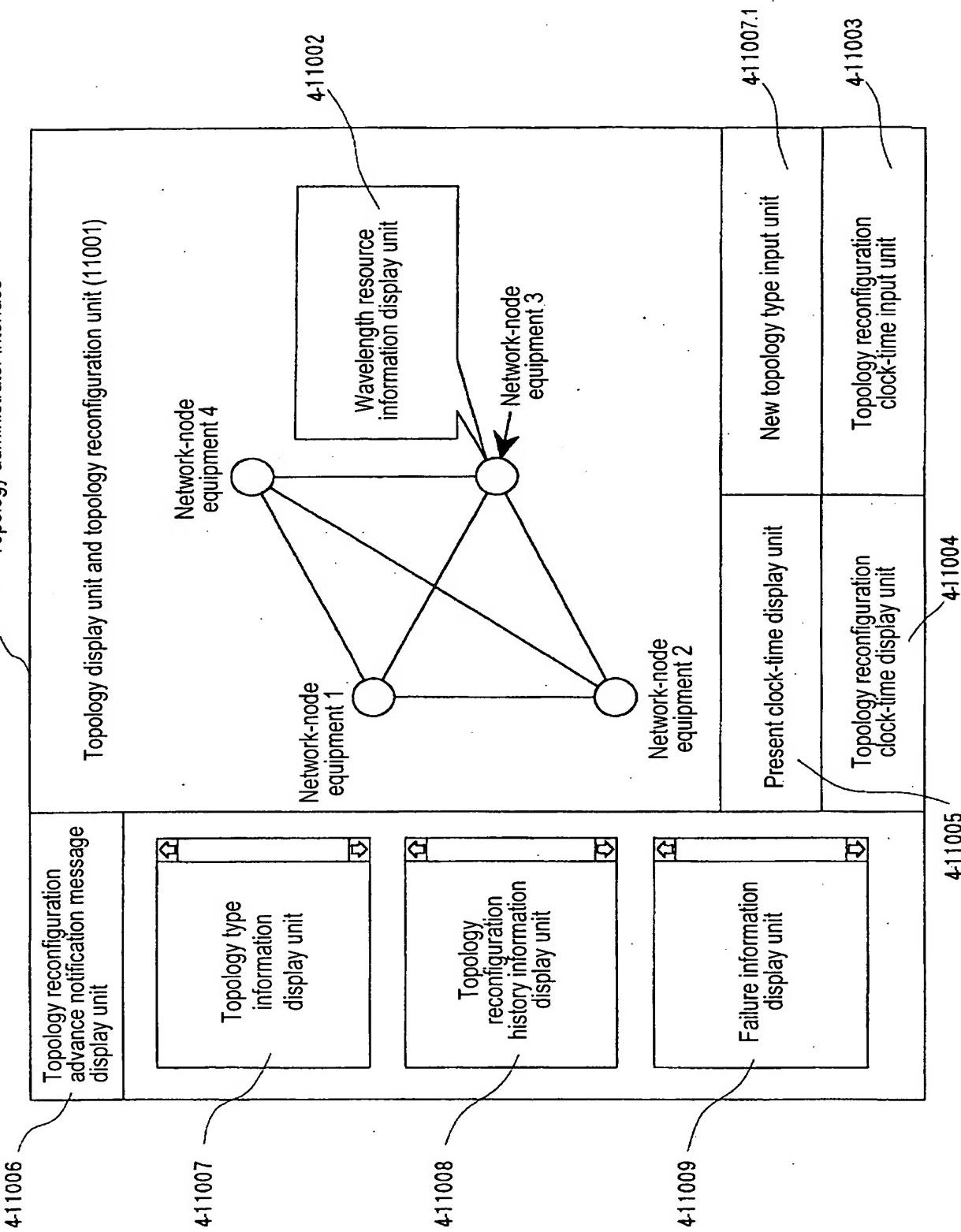
FIG. 4-19



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FIG. 4-20 4-11000a Topology administrator interface



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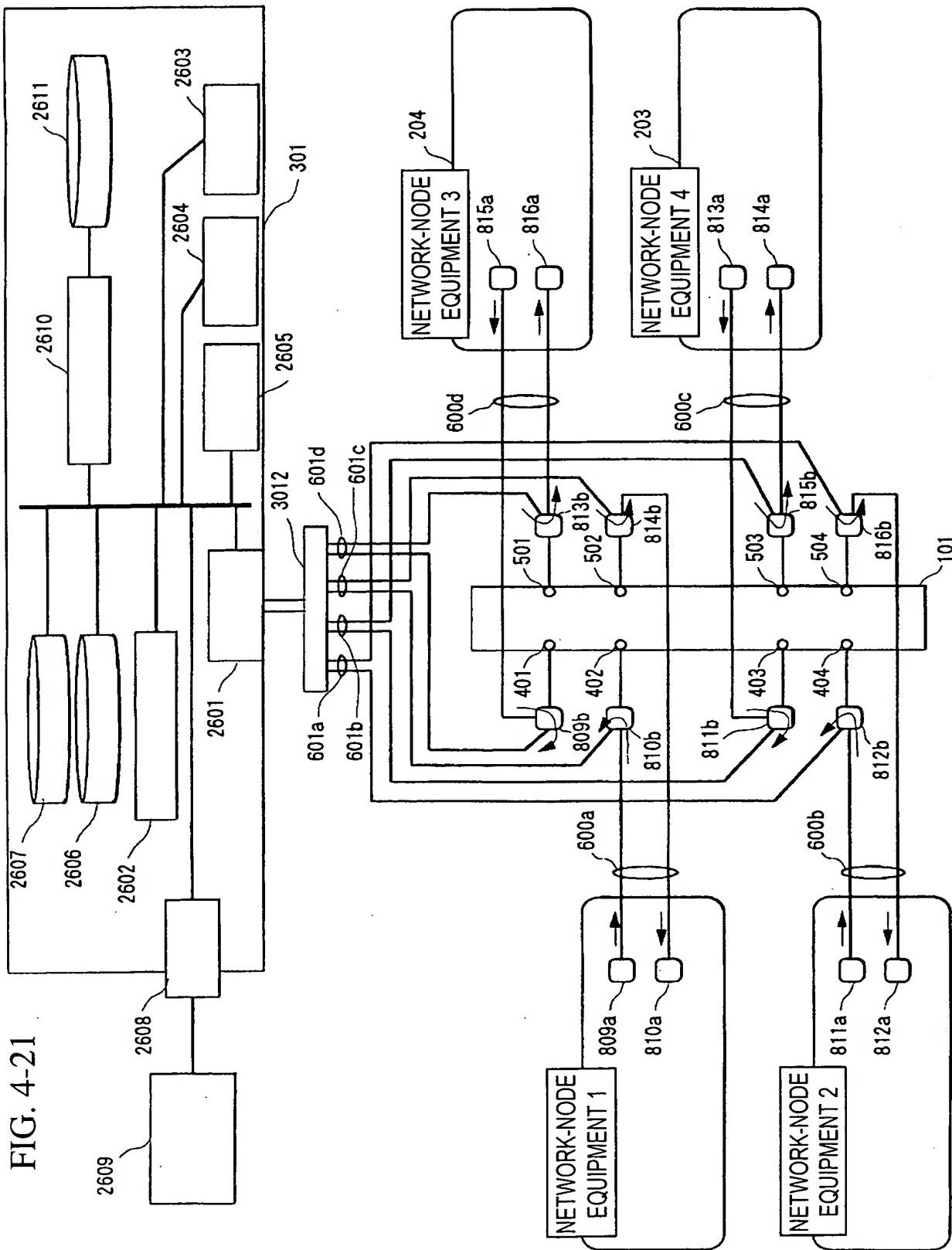


FIG. 4-22

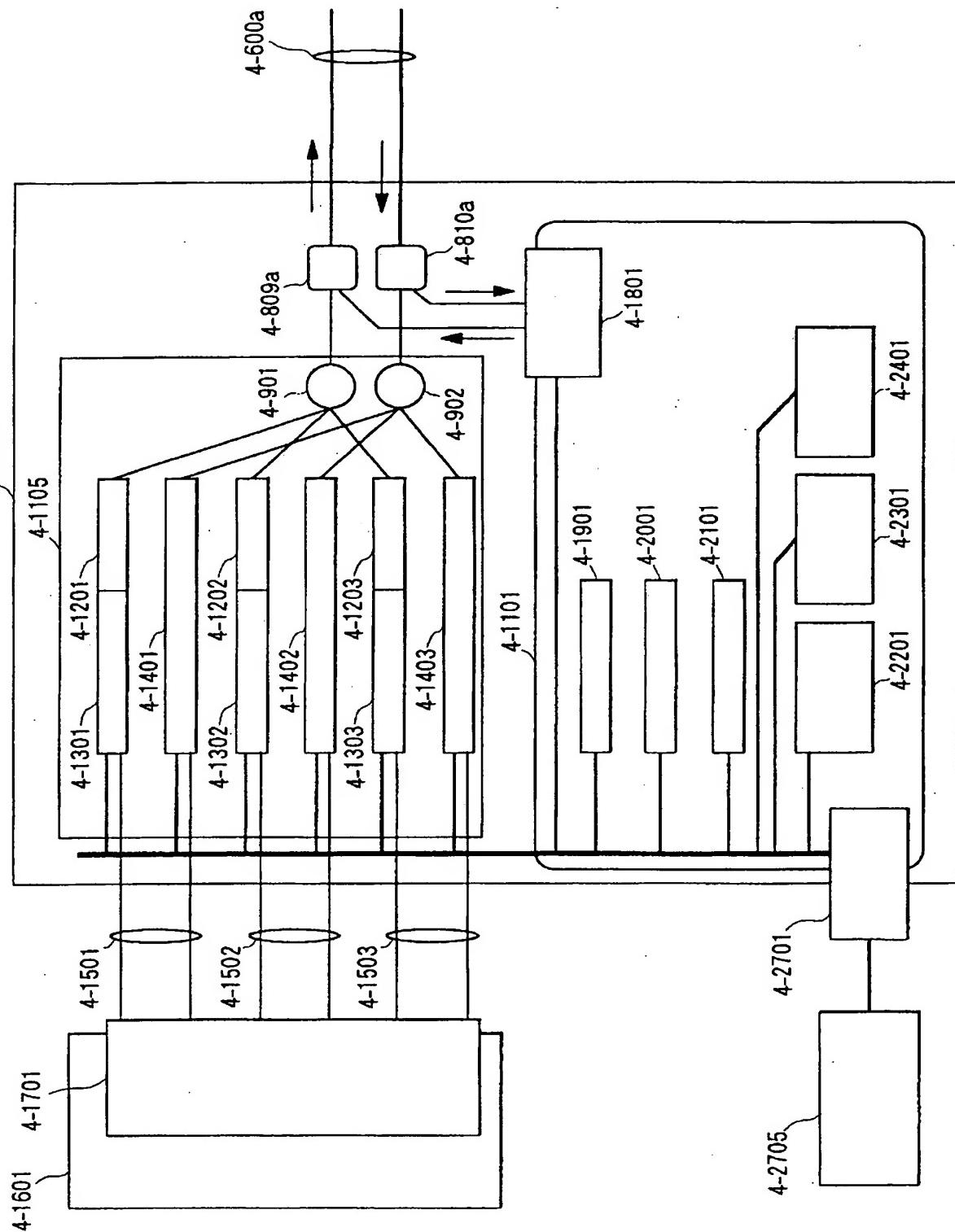


FIG. 4-23

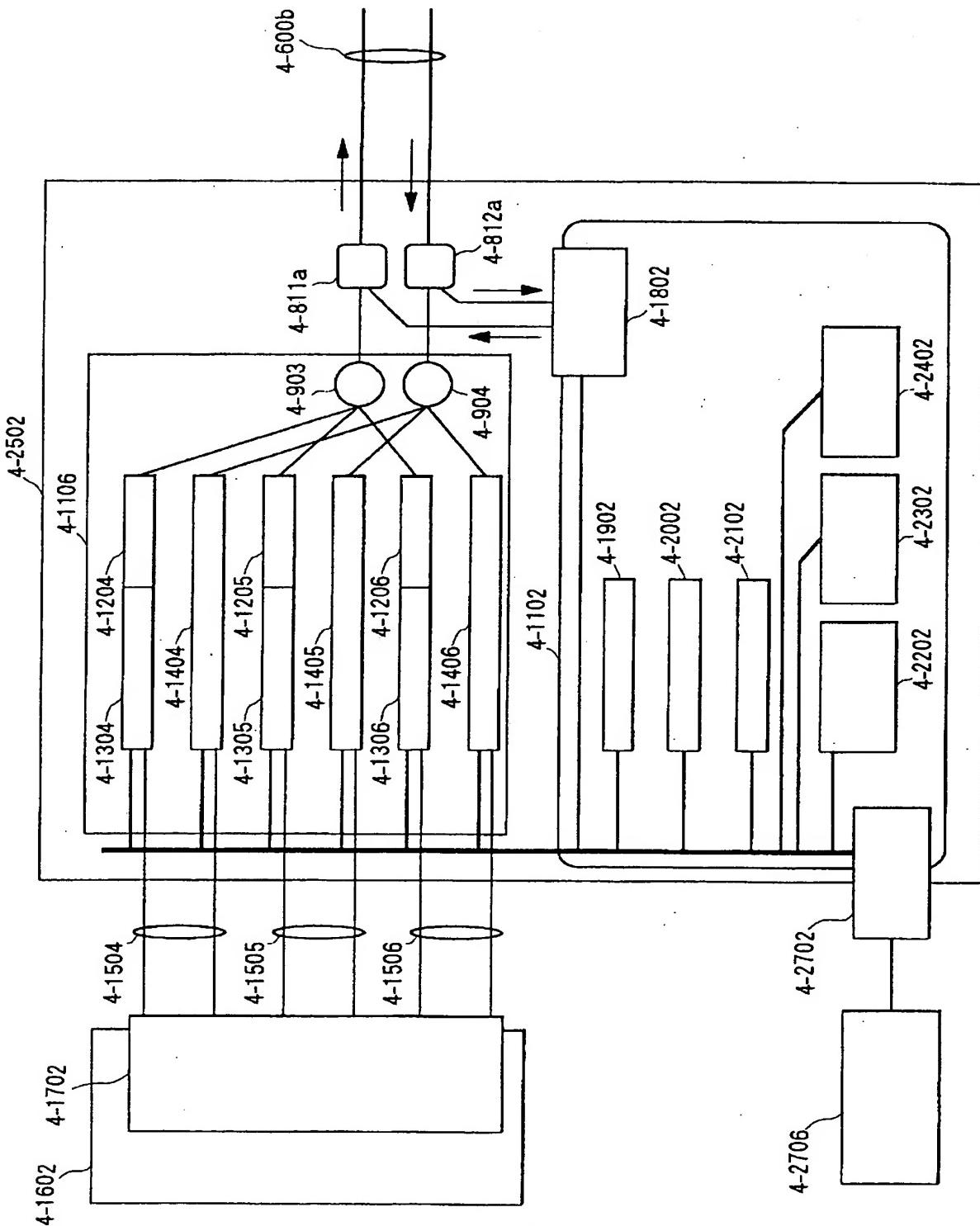


FIG. 4-24

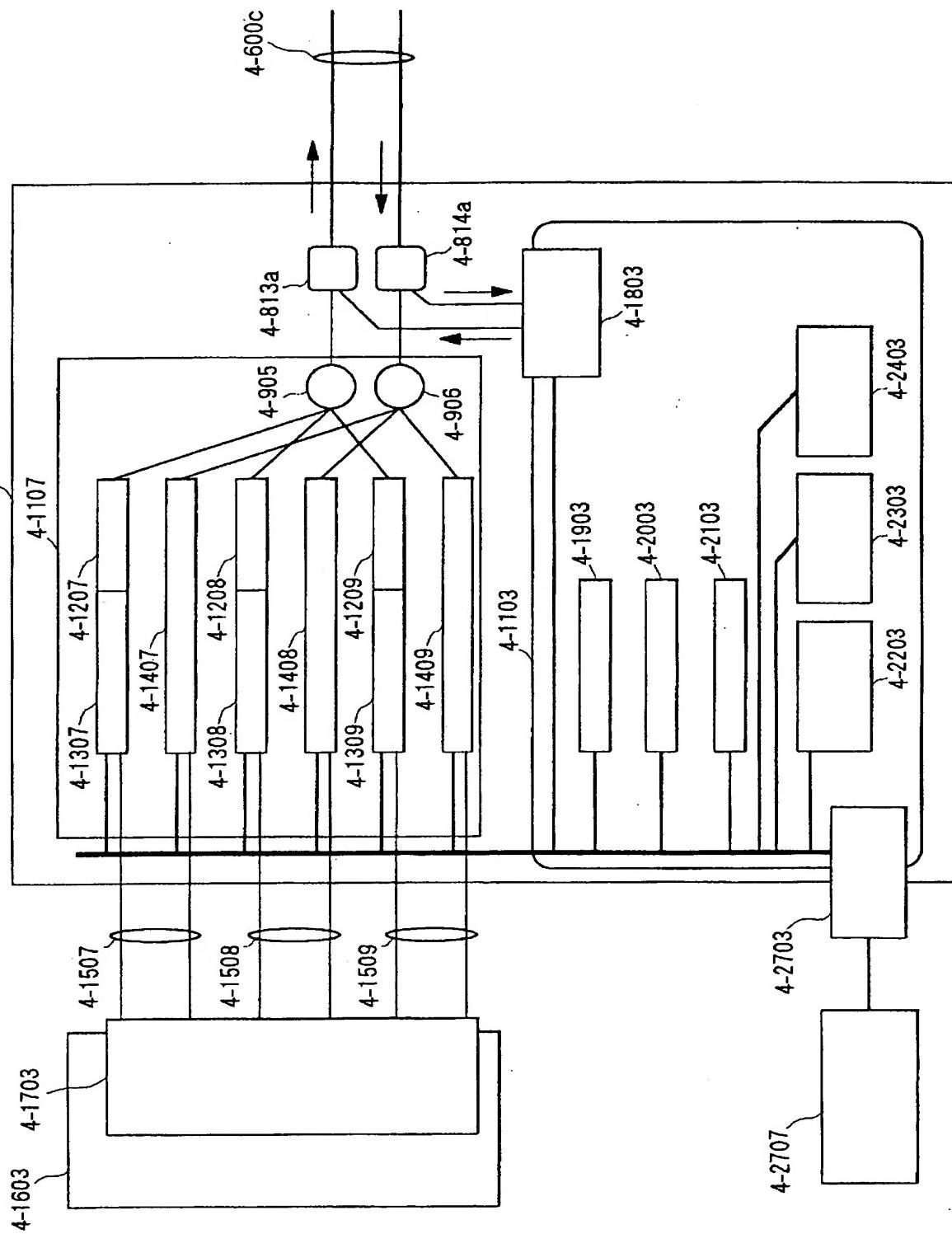
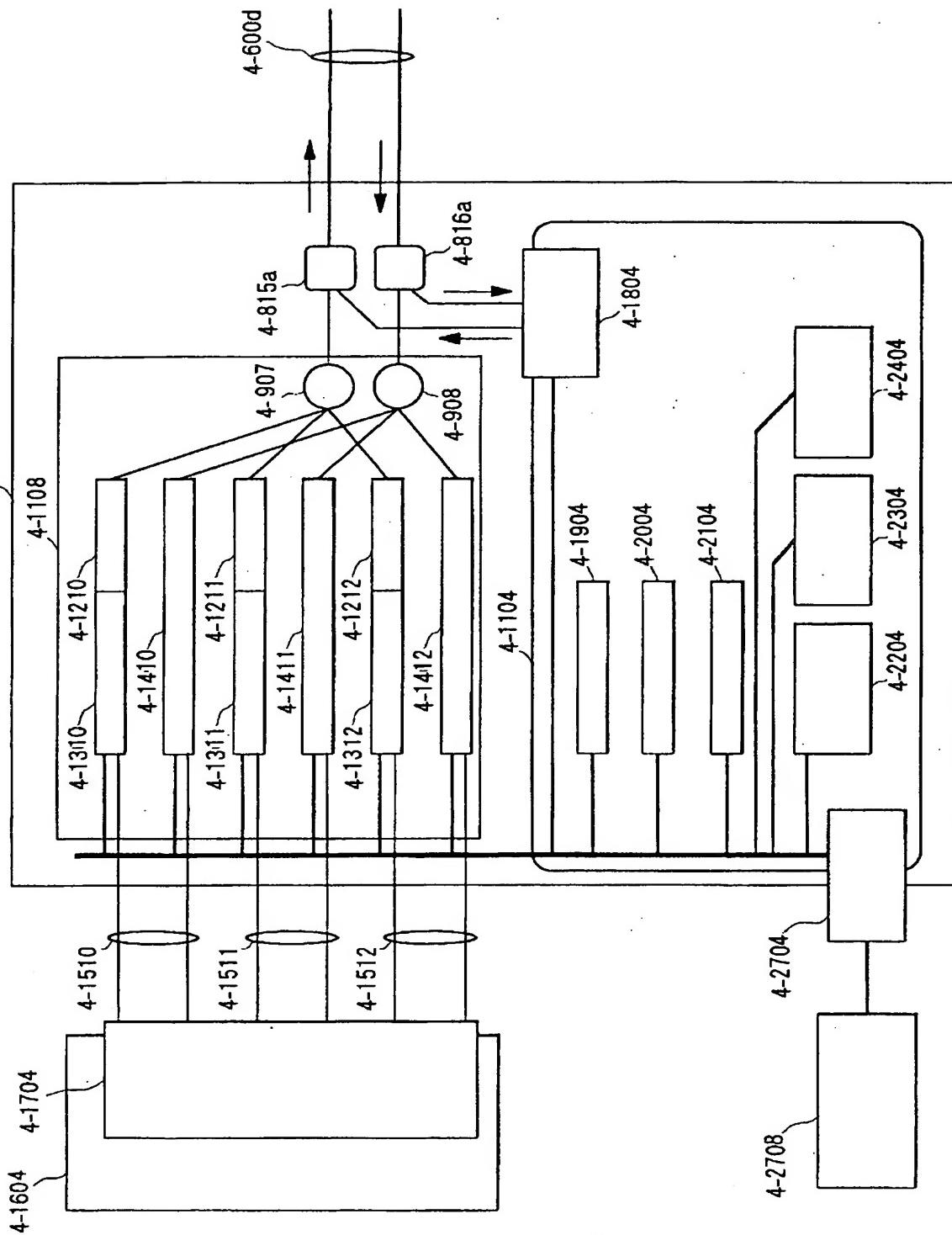
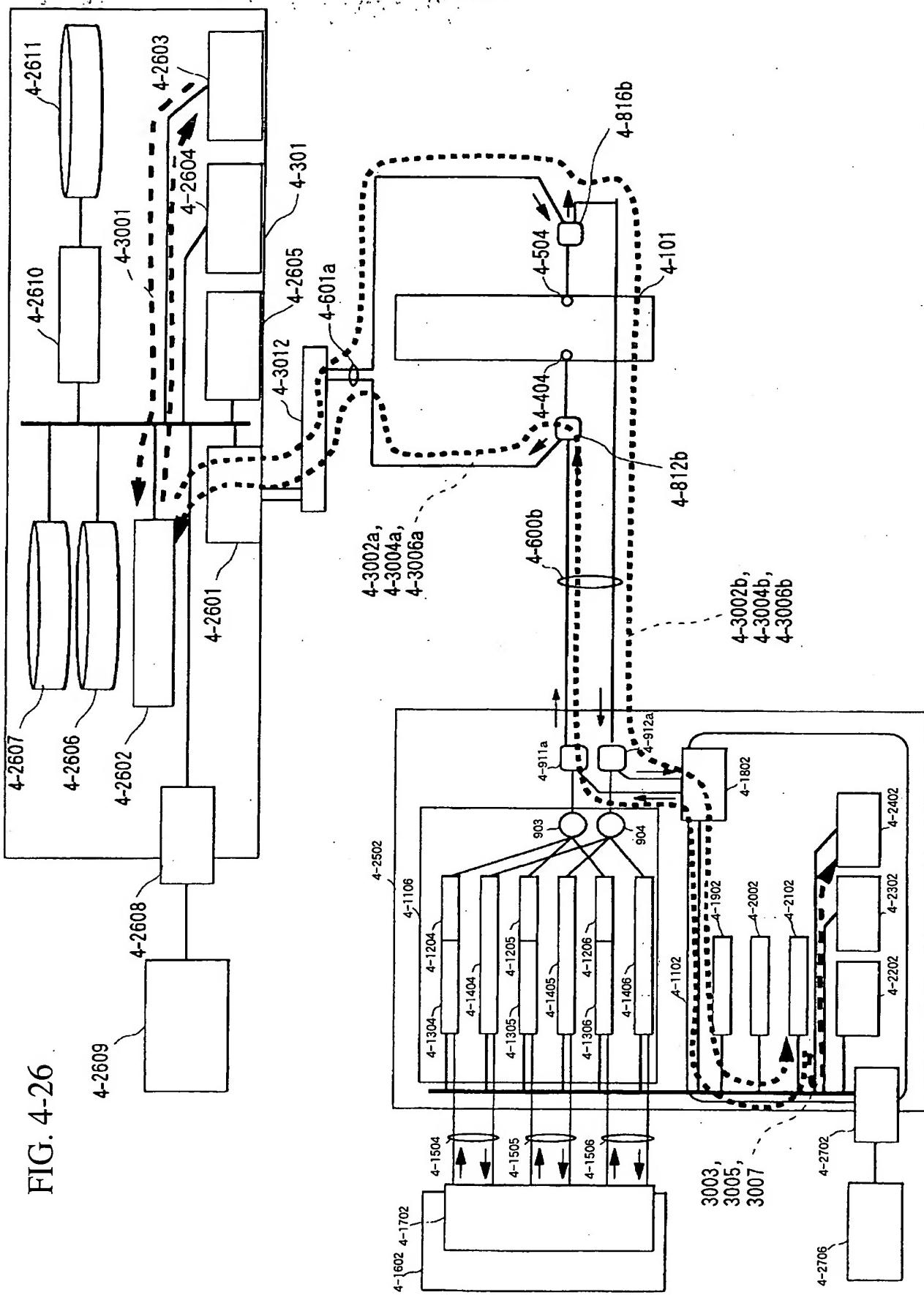


FIG. 4-25

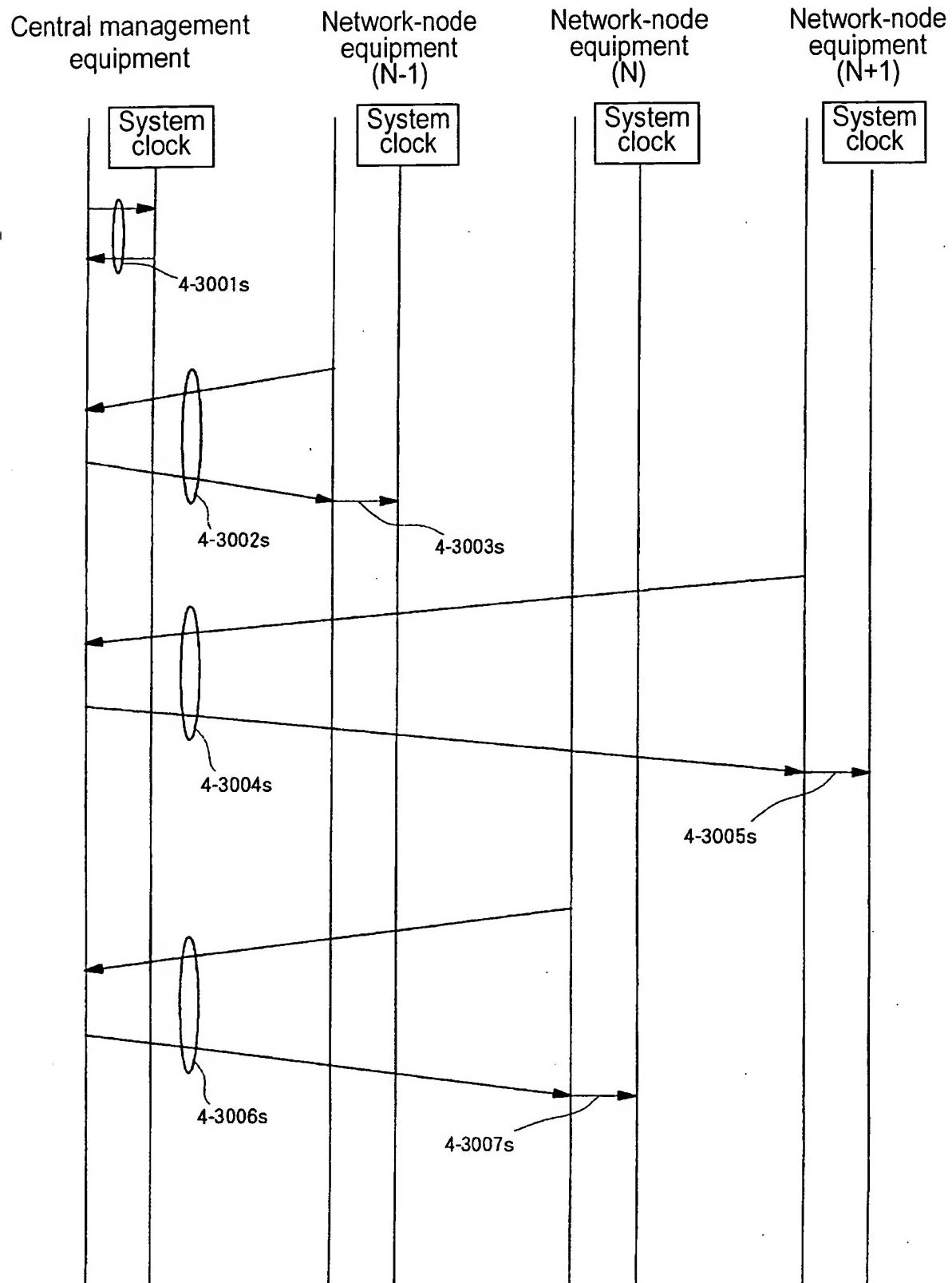


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FIG. 4-27



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FIG. 4-28

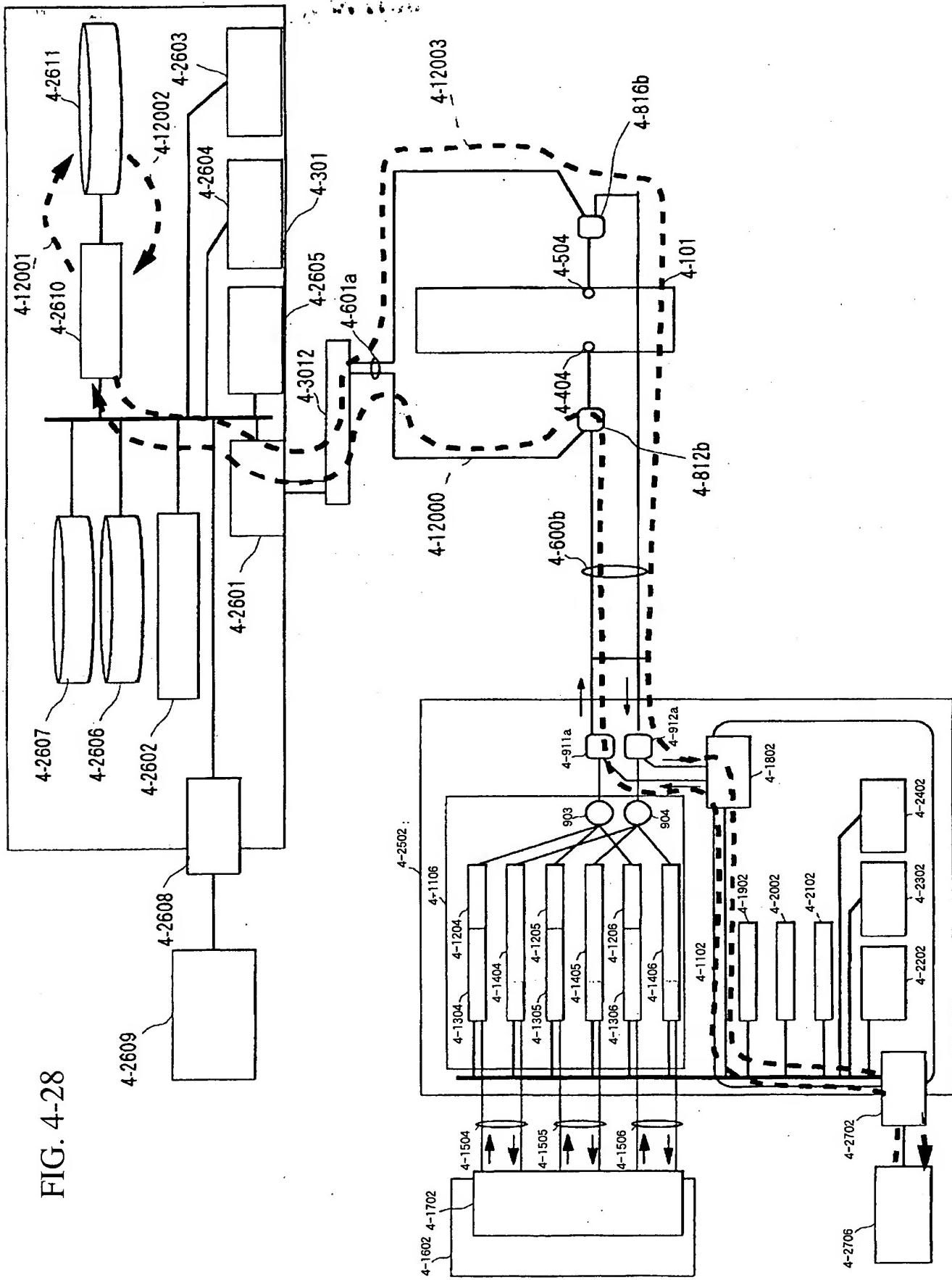


FIG. 4-29

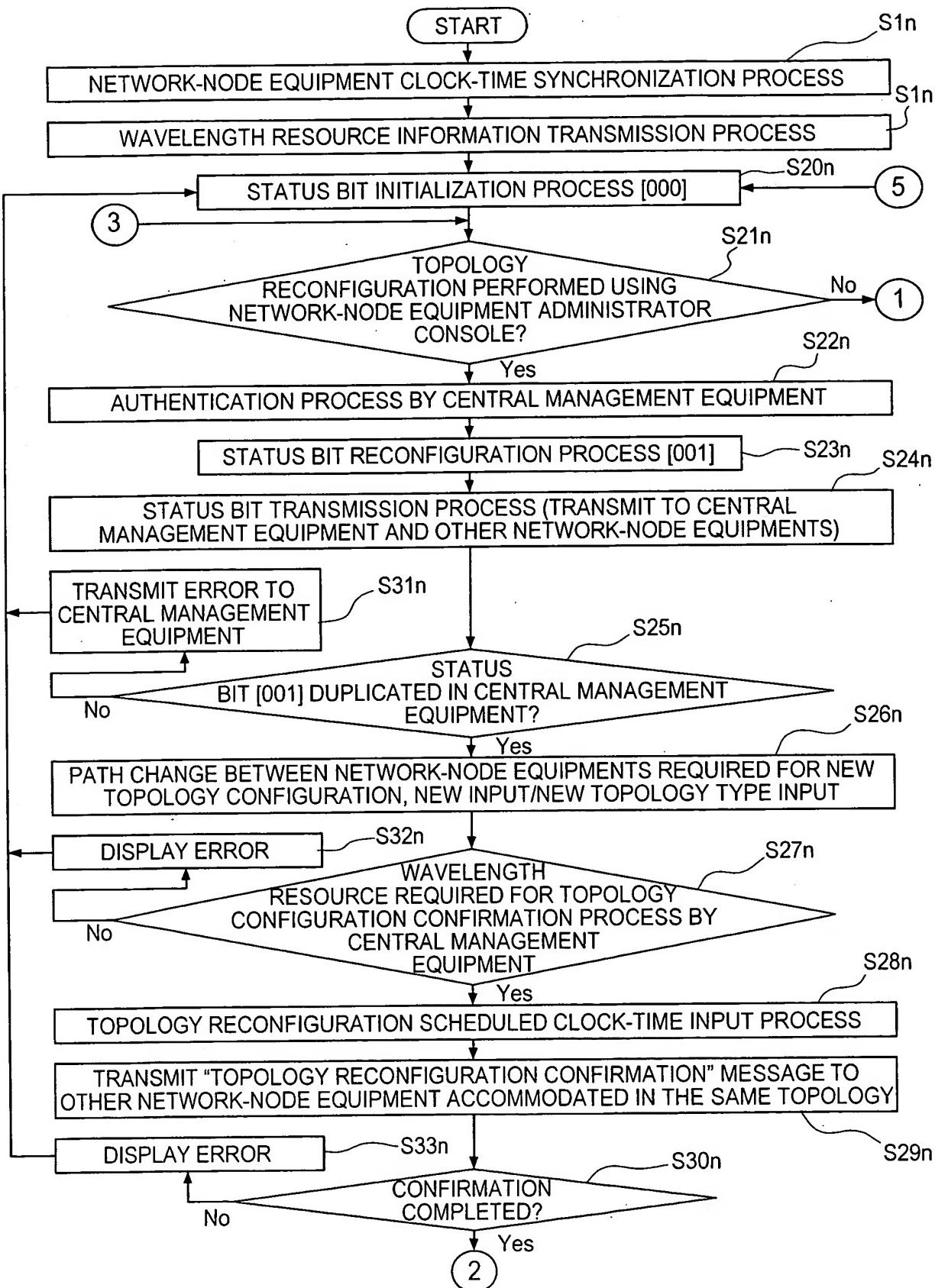


FIG. 4-30

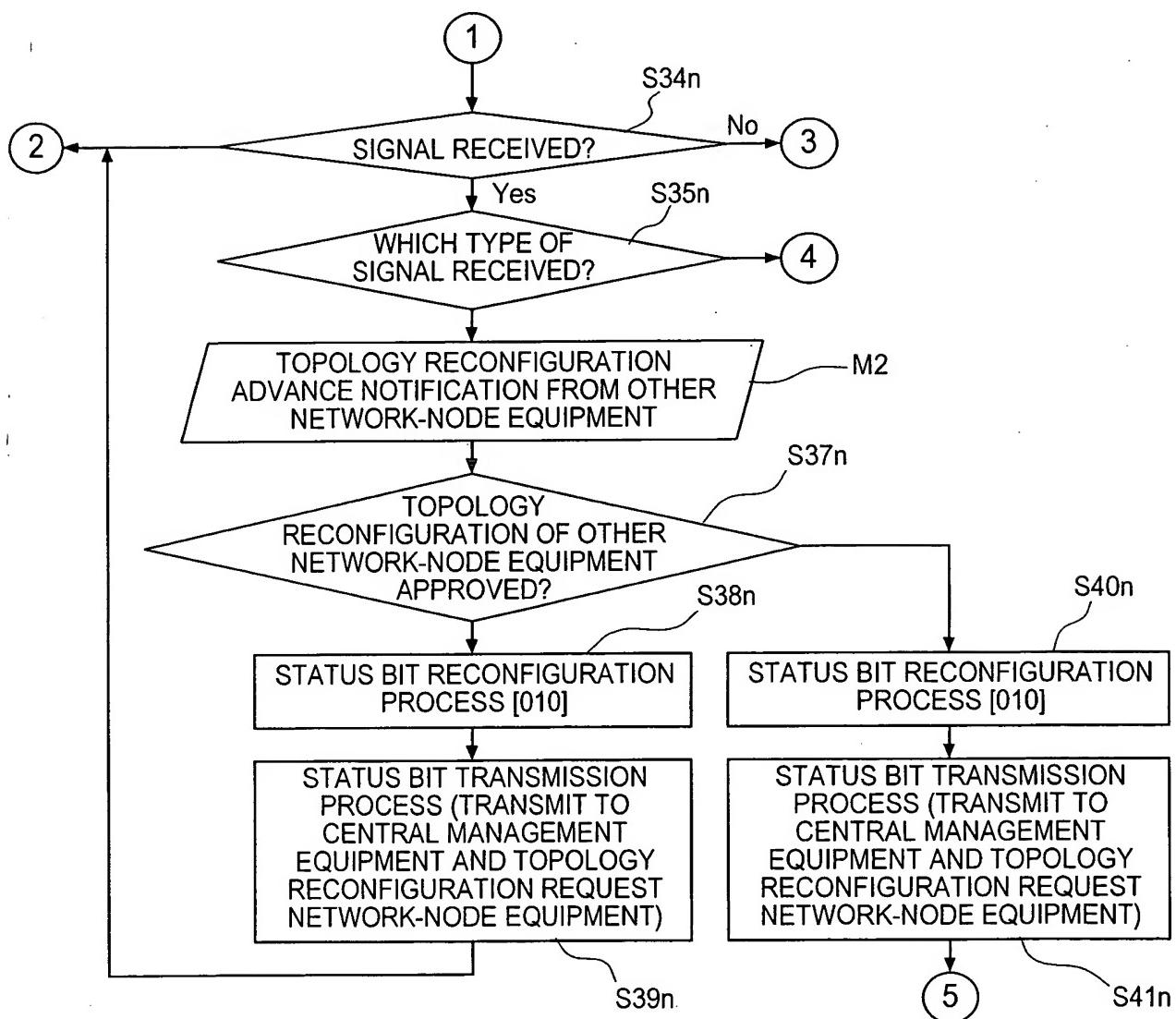


FIG. 4-31

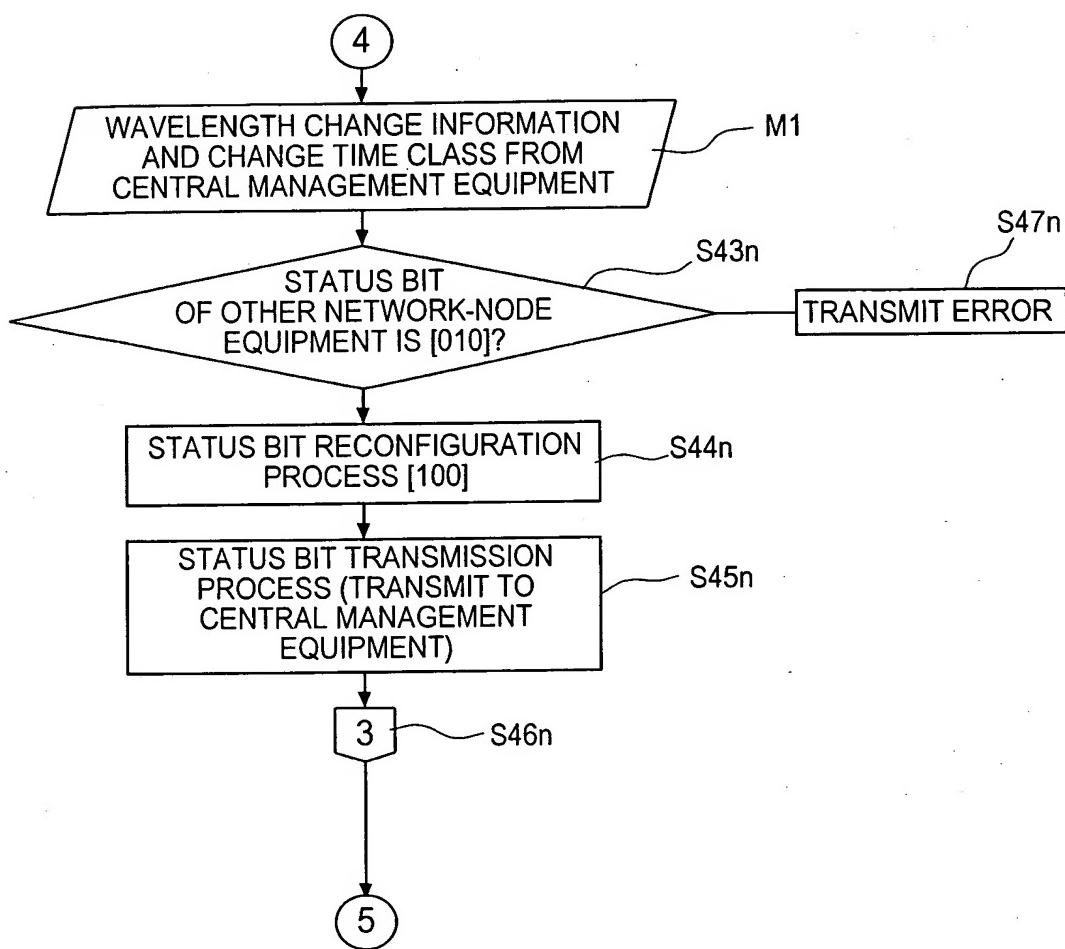


FIG. 4-32

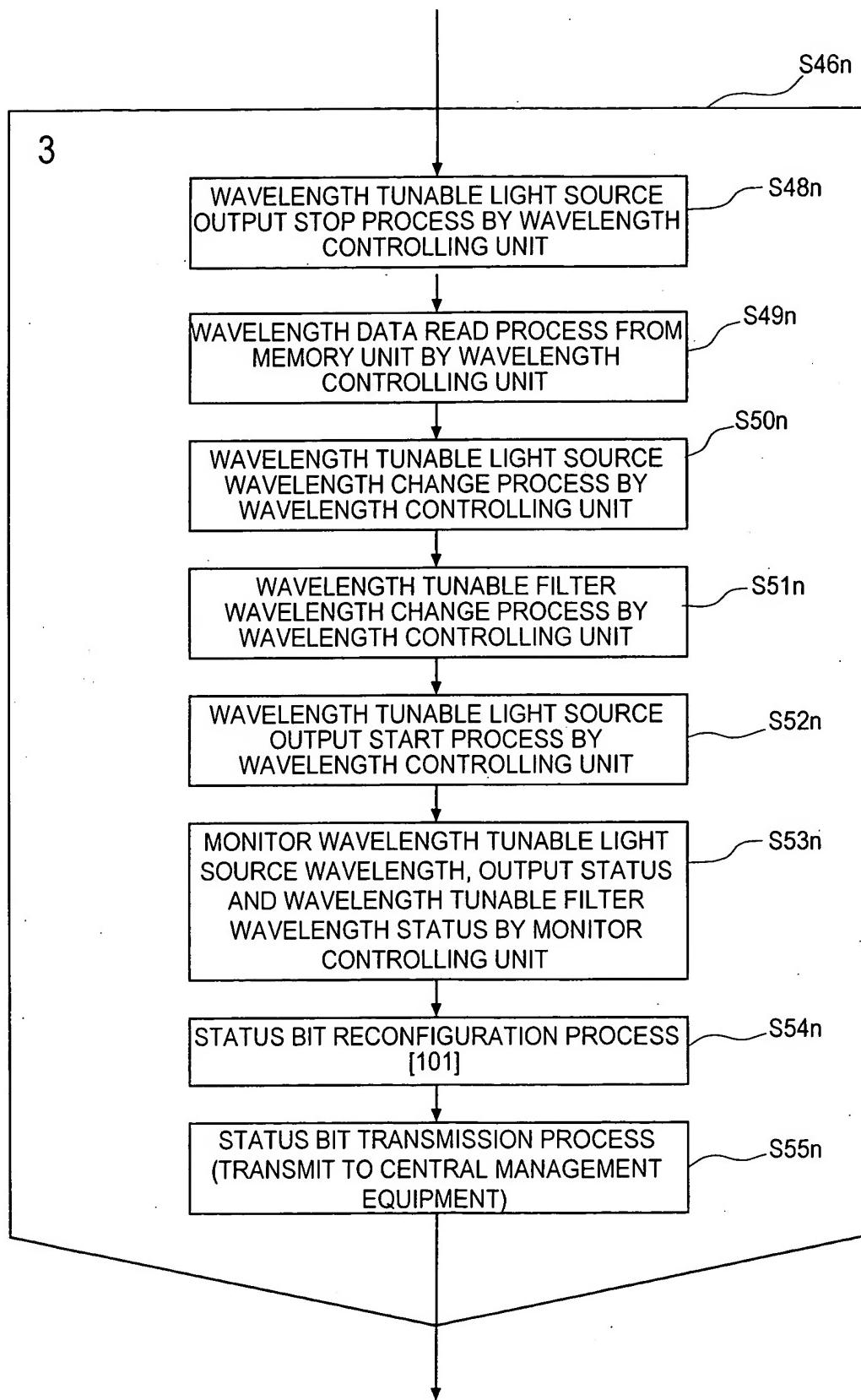
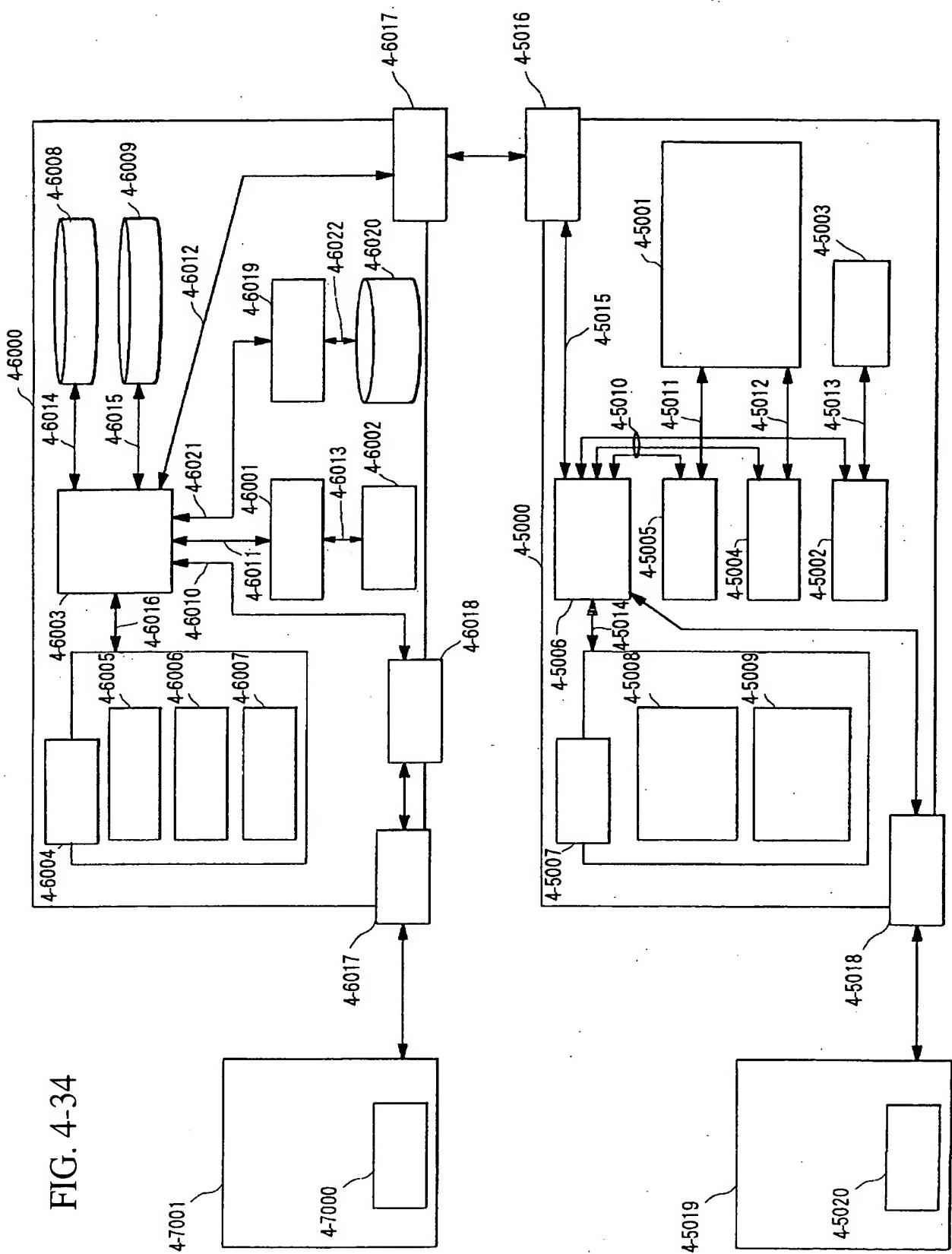


FIG. 4-33

Status bits	Network-node equipment status
000	Initial status
001	Topology reconfiguration reserved status
010	Completion of acceptance of topology reconfiguration request from other network-node equipment status
011	Rejection of topology reconfiguration request from other network-node equipment status
100	Completion of reception of wavelength and reconfiguration clock-time class status
101	Completion of reconfiguration to new wavelength status



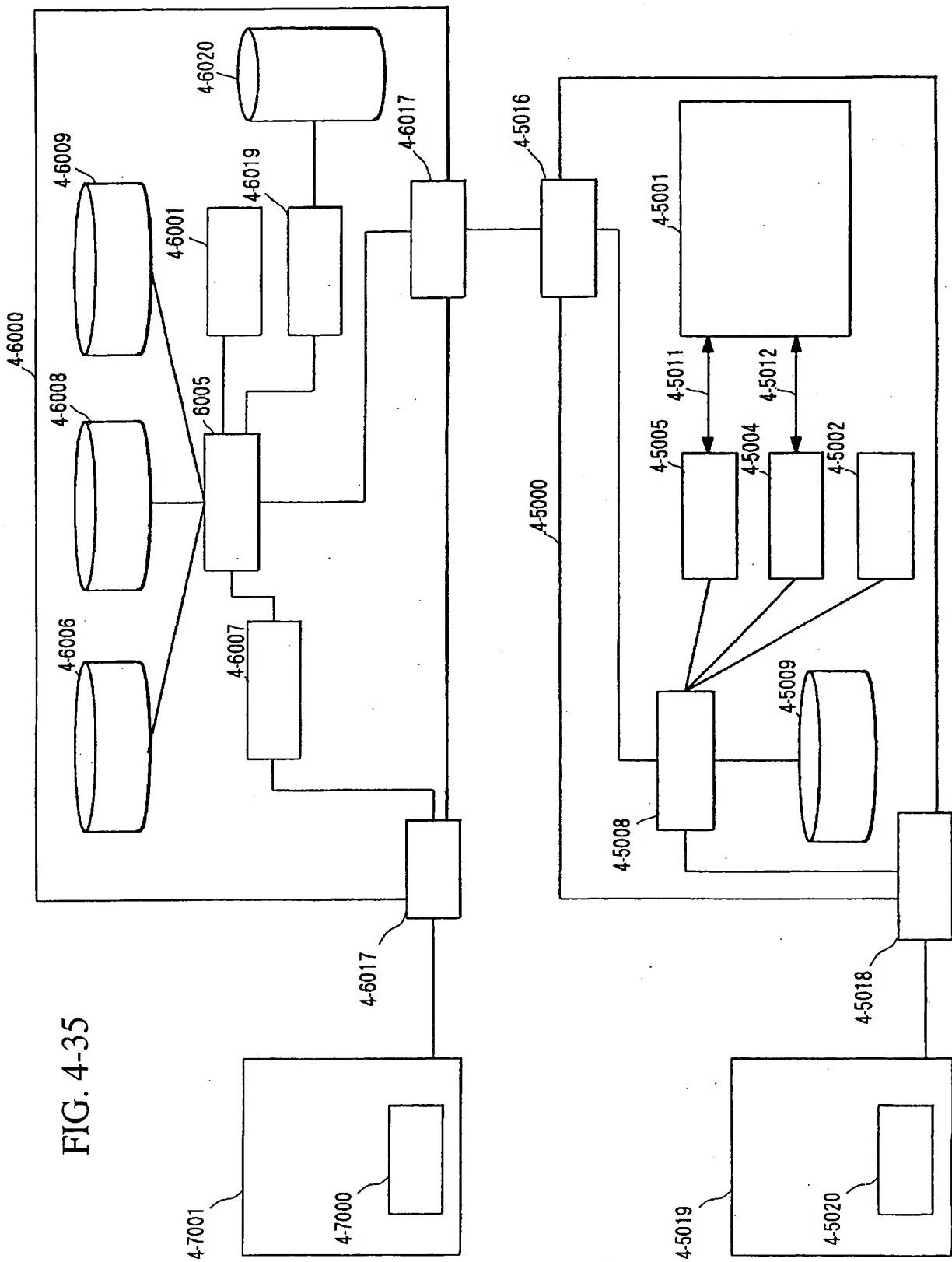


FIG. 4-35

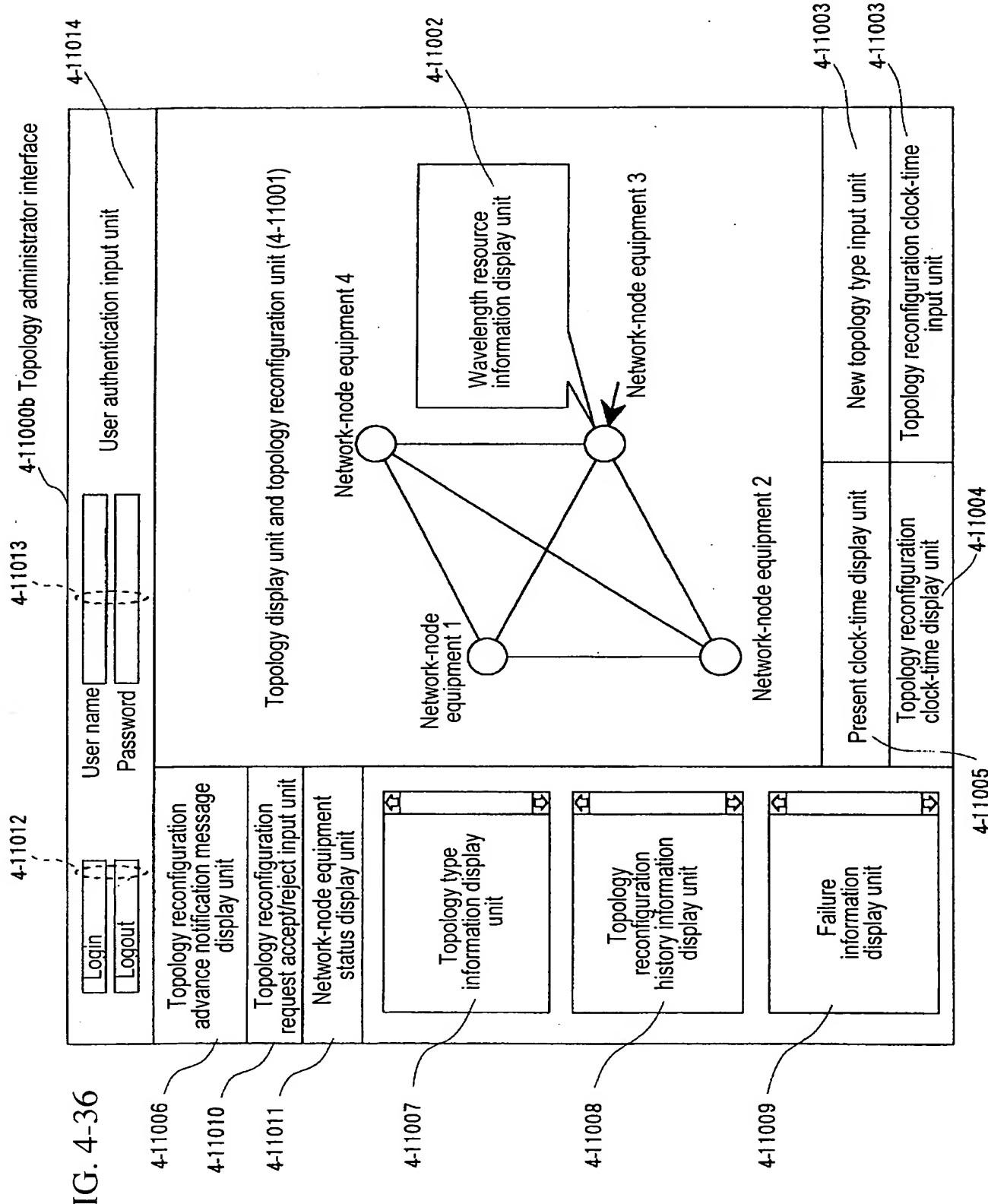


FIG. 4-37

